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ABSTRACT

Alaska is a state of geographic and cultural extremes. In order to improve the standard of health and to provide broader educational opportunity, especially in rural communities, the ATS-6 communications satellite has been used to compensate for remoteness and transportation difficulties. The Health/Education Telecommunications Experiment has given Alaska its first experience with a prototype operational satellite communications system for the transmission of television and multiple voice channels to low-cost earth terminals. Volume I of the three volume final report provides technical information regarding hardware, site selection, instructional programing, and community involvement in decision making. (EMH)

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ALASKA ATS-6

HEALTH/EDUCATION TELECOMMUNICATIONS EXPERIMENT

ALASKA EDUCATION EXPERIMENT

FINAL REPORT

VOLUME I

September 30, 1975

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The Office of Telecommunications, Office of the Governor of the State of Alaska, has prepared this Final Report under terms of Contract 400-75-0002 with the National Institute of Education, U.S. Department of Health, Education and Welfare.

The opinions expressed in this Report are those of the Office of Telecommunications, presented in an effort to provide guidelines for others faced with similar procedural and management decisions.

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LIST OF ABBREVIATIONS

CPB	Corporation for Public Broadcasting
FCC	Federal Communications Commission
HEW	U.S. Department of Health, Education and Welfare
NASA	National Aeronautics and Space Administration
NCET	National Center for Educational Technology/U.S. Department of Health, Education and Welfare
NIE	National Institute of Education/U.S. Department of Health, Education and Welfare
NPR	National Public Radio
PBS	Public Broadcasting Service

ARC	Appalachian Regional Commission
ATS-F	NASA's sixth Applications Technology Satellite, pre-launch
ATS-6	NASA's sixth Applications Technology Satellite, post-launch
ATSOCC	Applications Technology Satellite Operations Control Center, Goddard Space Flight Center, National Aeronautics and Space Administration
FORMS	Federation of Rocky Mountain States, Denver
HET	Health/Education Telecommunications Experiment
NCC	Network Control Center, Denver

AEBC	Alaska Educational Broadcasting Commission
AFN	Alaska Federation of Natives
ASOSS	Alaska State-Operated School System
DOE	Alaska Department of Education
IHS	Indian Health Service

ALED	Alaska Educational Experiment
CNER	Center for Northern Educational Research, University of Alaska, Fairbanks, Alaska
GOT	Governor's Office of Telecommunications, State of Alaska, Juneau
KUAC-TV	University of Alaska, Division of Media Services television station, Fairbanks, Alaska
NWREL	Northwest Regional Educational Laboratory, Portland, Oregon
PCI	Practical Concepts, Inc., Washington, D.C.

ANM	*Alaska Native Magazine*
BOLD	Basis Oral Language Development
ECE	Early Childhood Education
TIST	Teacher In-Service Training
VDP	Viewer-Defined Programming

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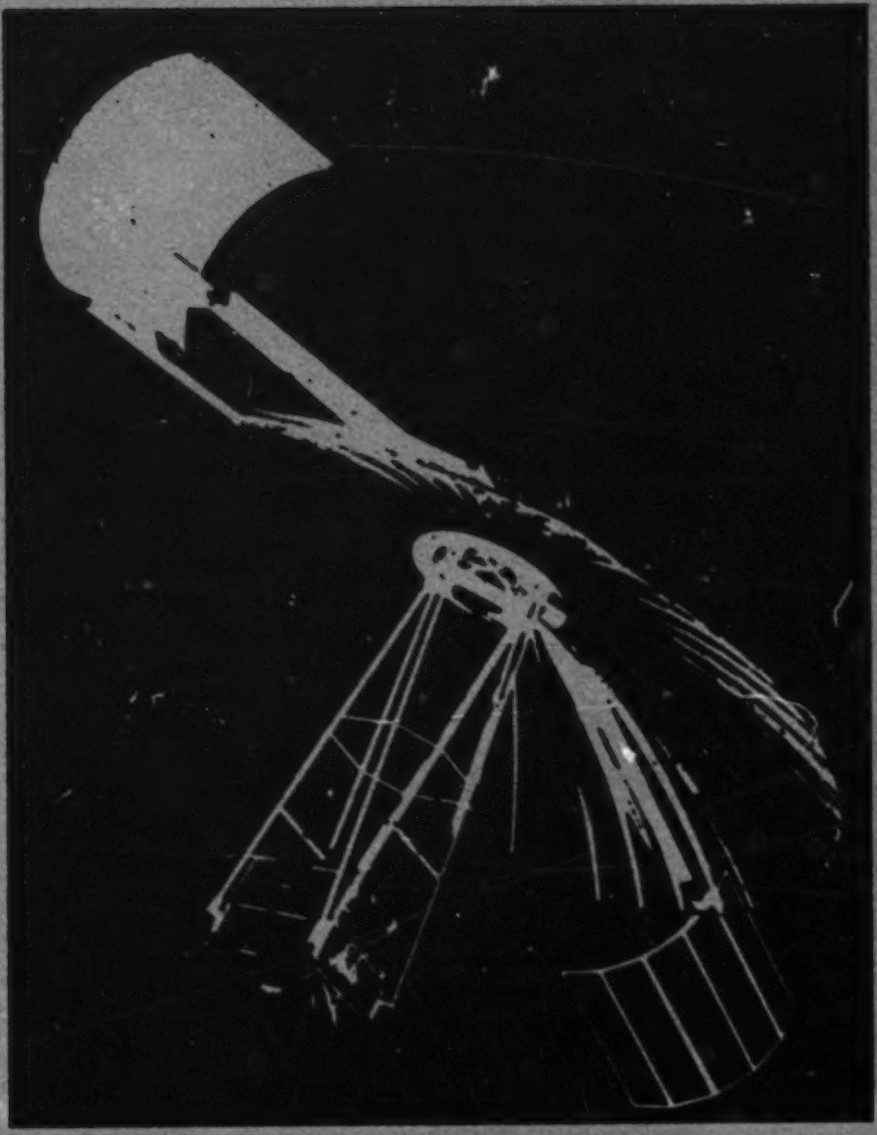
I. INTRODUCTION



I. INTRODUCTION

Alaska is a state of extremes. It has the smallest population of any state (less than 350,000) and the largest land area (one-fifth the size of the continental United States). From its west to east coasts, spanning four time zones, Alaska stretches the distance from California to Florida. The state's numerous mountain ranges contain half the world's glaciers, and 19 mountains over 14,000 feet; there are over 3 million lakes larger than 20 acres.

Alaska has the most extreme climate of any state in the Union, ranging from southeastern rain forest to far northern arctic tundra; one-third of the state is north of the Arctic Circle.

The list of extremes carries over into every aspect of life in the state. Forty percent of all Alaskans live in rural communities with less than 1,000 people. The majority of Alaska's communities are small and rural. Some are extremely remote from the larger urban areas. Of the state's 265 villages, towns and cities, two-thirds have no access to any ground transportation system.

> Alaska may well have more settlements not on any road system than the rest of the states combined, for fewer than a dozen Native villages are on the state's limited road network. Two are on the route of the 540-mile Alaska Railroad. Access to the other 170 or so is only by air, or seasonally, by boat or snowmobile or dog team.
>
> In the fall and spring, not all villages are accessible even by air. At the 45 villages without airstrips, several weeks of fall freeze-up prevent float planes from landing in the rivers, and several weeks of

> spring breakup prevent ski-equipped planes from landing on winter's ice... Airstrips, where they exist, are usually gravel.[1]

Adding to the isolation of the state's rural areas is Alaska's poor communications system.

> Communication between remote areas in the state has traditionally been by HF radio in the frequency region of 2 to 15 MHz. At these frequencies, radio waves are reflected from the ionosphere (100 to 300 km above the earth) and are returned to earth. The ionosphere over Alaska is extremely complex. It may be divided into three general regions, the polar cap, the auroral zone, and the mid-latitude. Each of these regions behaves differently as a function of time of day, time of year, sunspot number, magnetic activity, and other variables. The behavior of the ionosphere and the extent of these regions is not (even today) well understood, nor is it predictable with any degree of accuracy... Suffice it to say that HF communications between two points in Alaska will, at best, be practical for only a small percentage of the time and may not be available at all for several consecutive days. HF communications networks are completely unreliable and many areas may be without any form of communications for extended periods.[2]

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[1] Federal Field Committee for Development Planning in Alaska, Alaska Natives and the Land, Anchorage, Alaska, 1968.

[2] Stanley, Glenn M., Geophysical Institute of the University of Alaska, "Satellite Telecommunications Experiments," March, 1972.

Telephone service is provided to some rural communities by local utilities, state agencies or private carriers, with much variation in both type, cost and quality of service. In a land where physical isolation is severe, communications become increasingly important, yet communities which do have telephone service typically suffer from overcrowded circuits, especially in smaller communities having only one telephone for all to share.

AM and FM radio exist primarily in Alaska's larger cities, serving metropolitan areas and vicinities. There are six public broadcasting facilities throughout the state. By way of contrast, by mid-1972 60% of America's population could hear public radio; only 16% of Alaska's population could receive a public radio signal in 1973.[3]

Eighty-five percent of Alaska's population, mainly urban, can presently receive some type of television signal. There are four main types of community television distribution systems: commercial direct broadcast, public, Armed Forces, and commercial cable. Almost all programs on all systems are video-taped or filmed and played back on a one-week or more delayed basis.

Public reaction to these different community distribution systems is varied. Those who receive essentially full network coverage on a delayed basis complain of the lack of live service. Those with only one network want additional channels and real time service. In areas served by commercial cable, the public wants "free" television, full network service, and live broadcasts. Alaskans who are not served by any distribution system express a desire for some sort of television.

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3. Johnstone, Stowell, "Educational Broadcasting Today: A Sketch," October, 1973.

Communication is also made more difficult by the vast cultural diversities found in Alaska. The major Native groups are Eskimo, Aleut and Indian (Athabaskan, Thlinget, Haida and Tsimshian), which together comprise 17% of the total state population. Three-fourths of the Native population live in approximately 175 small, rural villages with populations of 25 or more.

The variety of cultures is evidenced by the numerous traditional languages that are still spoken in Alaska. Within most of the major Native languages are a number of dialects, varying with the location of the villages. Those who speak one Native language or dialect cannot always readily understand those who speak another.

Life in Alaska's villages is very different from the pattern of communities in the rest of the United States. Villagers often rely, in some measure, on food gathering for subsistence, generally supplemented by seasonal employment or public assistance. Year-round jobs are scarce, and when they exist are likely to be held by non-Natives. Incomes are very low, and the cost of living is high. It is in these small, isolated communities that the most serious problems of education and health persist.

Health care is one of the major problems in Alaska's rural villages.

> The health status of Alaska Natives is indicated by the fact that the average age of death is about half of that of other Americans. In 1966, the average age of death among Natives was 34.5 years, a slight increase over the preceding year. And by any other measure, the health status of Natives is inferior to that of other Alaskans.[4]

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[4] Federal Field Committee, Ibid.

> Broadly told, the poor physical health of Alaska Natives is principally the result of environmental conditions in villages--housing that is overcrowded and insufficiently ventilated, water supplies that are impure, and inadequate waste disposal. Contributing factors are general malnutrition, a too-frequent lack of understanding of sanitary practices among villagers, and the inability of the Division of Indian Health--owing to limited appropriations and the remoteness of villages--to provide a level of services appropriate to needs...[5]

Medical service in most villages is limited to local health aides, working under the direction of a Public Health Service physician from a regional hospital, often quite distant from the individual villages.

> An example is the P.H.S. Hospital at Tanana, which is staffed by three physicians who administer health care to approximately 20 villages located in an area of about 200,000 square miles. Only a few of these villages have telephones and (until the advent of the ATS-1 medical experiments) all communications including emergency requests for evacuation of patients was handled by HF radio. Communications to this group of villages has been less than 20% effective when attempted by HF. No exact measure of the number of deaths or complications because of lack of prompt treatment because of poor or non-existent communications can ever be made.[6]

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[5] Federal Field Committee, Ibid.

[6] Federal Field Committee, Ibid.

The effectiveness of Alaska's rural medical care system depends on the quality and reliability of communication between the doctor and the health aide, which HF radio does not supply consistently. In 1970 it was reported that for every six bush HF radio communications attempted for medical assistance, one was completed. Half of those completed were unintelligible.[7]

A 1972 test demonstration of the ATS-1 system indicated that the satellite substantially increased communications effectiveness:

> Good quality voice communication between the villages and Fairbanks via satellite was virtually 100 percent. Failure to contact via satellite occurred only 4 times out of 80 tries, and this was due to minor mechanical problems, not to ionospheric perturbation. By contrast HF radio contact between the villages and Tanana was infrequent and of poor quality. Failure to make contact occurred 43 times out of 61 tries.[8]

Satellite technology is beginning to be applied to improve emergency health care in Alaska. An operational satellite system for Alaska could be a feasible means of maximizing communications, to improve not only medical service, but health education vital to improving the quality of life in rural Alaska.

Educational problems in rural Alaska are also severe. Most local education systems provide schooling only through the sixth grade. The language spoken in the classroom is primarily English. Almost all of the teachers are non-Native educators who do not speak the local Native language. Often these teachers are the only English speaking models in the village. Several bilingual programs have been introduced to village schools in recent years. Native children, like children everywhere, have learned to speak both their Native dialect and English by listening to and imitating local models. The lack of both good English-speaking models and of systematic oral English instructional procedures perpetuates incorrect English patterns by many Native children.

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[7] U.S. Department of Health, Education and Welfare, "Report on Alaska Biomedical Satellite Communications Project for November and December, 1971," January, 1972.

[8] Stanley, Ibid.

To continue their education, village students are required to attend regional boarding schools, or move to a larger, more urban community. Coming from small and isolated villages, many students have almost no frame of reference outside of village life, and find it difficult at best to adjust to more complex urban living.

In one recent study on education in Alaska, A Long Way From Home, Dr. Judith Kleinfeld contended that (1) a generation of Native students has been "destroyed" by the present practice of separation from home, family, and village and placements in district boarding schools, and (2) the best solution to this problem is to provide effective secondary programs in Native villages.

Satellite educational television is seen by the State of Alaska as one possible, potentially cost-effective means of meeting the educational needs of rural Alaska. With implementation of the Native Land Claims Settlement Act, awareness of the need for relevant, rural education is increasing statewide, given that effectively educated and trained Alaskan Native leaders can contribute to the long-range success and impact of this legislation on all Alaskan Natives.

Many recent studies have agreed in concluding that a satellite communications system could ideally apply to the complex problems of rural Alaska's isolation.

In August of 1970, a United Nations Educational, Scientific, and Cultural Organization - National Education Association (UNESCO-NEA) team traveled to Alaska to investigate the feasibility of using satellite communications to alleviate educational problems of the state. The team, Henry Cassirer of UNESCO, and Harold Wigren of NEA, concluded, in part:

> Satellite communications for Alaska, as part of an overall long-range educational communications system, are not only feasible but necessary for improved communications in the State. In many respects, a satellite was "invented" for Alaska because of Alaska's unique communications problems, lack of terrestrial communications facilities, mountainous terrain, harsh climate and sparse population.[9]

Cassirer and Wigren also concluded that, owing to the high cost of equipment required for television transmission and reception on NASA's ATS-1, television experiments should be postponed until "a later generation of satellites of the ATS-F or ATS-G variety are available."

Later the same year, consultants George Hall and Frank Norwood from the National Association of Educational Broadcasters, stated:

> Geographic and demographic conditions in Alaska require that the State make heavy, consistent, and systematic use of telecommunications

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[9] Cassirer, H.R., and Wigren, Harold, "Alaska: Implications of Satellite Communications for Education," UNESCO, Paris, November, 1970.

processes to facilitate and extend the operation of educational, training and informational programs of all kinds. The exact determination of the precise telecommunications machinery (radio, television, videotape, teletype) to employ in a given activity must be determined situationally through a careful weighing of the means available and results desired.[10]

In 1971 consulting engineers Hammett and Edison identified locations for conventional radio and television broadcasting stations, looking towards future interconnection. They concluded that:

> Conventional television broadcasting stations are the most economical method to bring educational television service to most Alaskans, but not to those living in remote or isolated villages more than 50-100 miles from a population center station; and
>
> A satellite distribution system is the only feasible method by which educational television service can be brought to all Alaskans.[11]

In its study, Economic Outlook for Alaska: 1971, the Federal Field Committee for Development and Planning in Alaska declared poor communications as Alaska's greatest inhibitor of economic and social development. "To improve the quality of life for all citizens of Alaska, but especially those living in rural communities, improved telecommunications must be employed to compensate for remoteness and difficult travel and transportation."

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[10] Hall, George, and Norwood, Frank, "A Plan for the Development of Educational Telecommunications in Alaska," National Association of Educational Broadcasters, Washington, D.C., October 21, 1970.

[11] Hammett and Edison, "Educational Communications in Alaska," San Francisco, July 15, 1971.

In a survey of educational requirements for the Alaska Educational Broadcasting Commission, educator Charles Ray declared: "A communications network extending to the most remote regions of the State is essential for the educational future of Alaska."[12]

There is no question that a satellite communications network can improve communications within the state of Alaska. With NASA's development of the ATS-6 communications satellite, the state was provided with a specific satellite experimental opportunity to gain maximum experience in the utilization of satellite technology and increase awareness of satellite potential directly suited to state needs.

Beginning with the first Program Plan submission by the Alaska Educational Broadcasting Commission (AEBC) to the U.S. Department of Health, Education and Welfare (HEW) in March, 1972, Alaska has seen the ATS-6 satellite as a prime opportunity to explore increased health and educational communications in rural Alaska.

The sites selected as earth terminals provided the Health/Education Telecommunications (HET) experiment with a cross section of characteristically rural Alaskan problems. Only five are on any existing highway system. Travel to the remaining thirteen is primarily by air or water, weather permitting.

Five of the 10 Athabaskan languages are represented in the satellite footprint, as well as Central Yupik Eskimo. Five communities in the footprint have substantial Thlinget-speaking populations. Some English is spoken with varying degrees of proficiency in all the villages included. Fourteen of the 18 experiment communities could be classed as rural villages, with an average population of less than 250.

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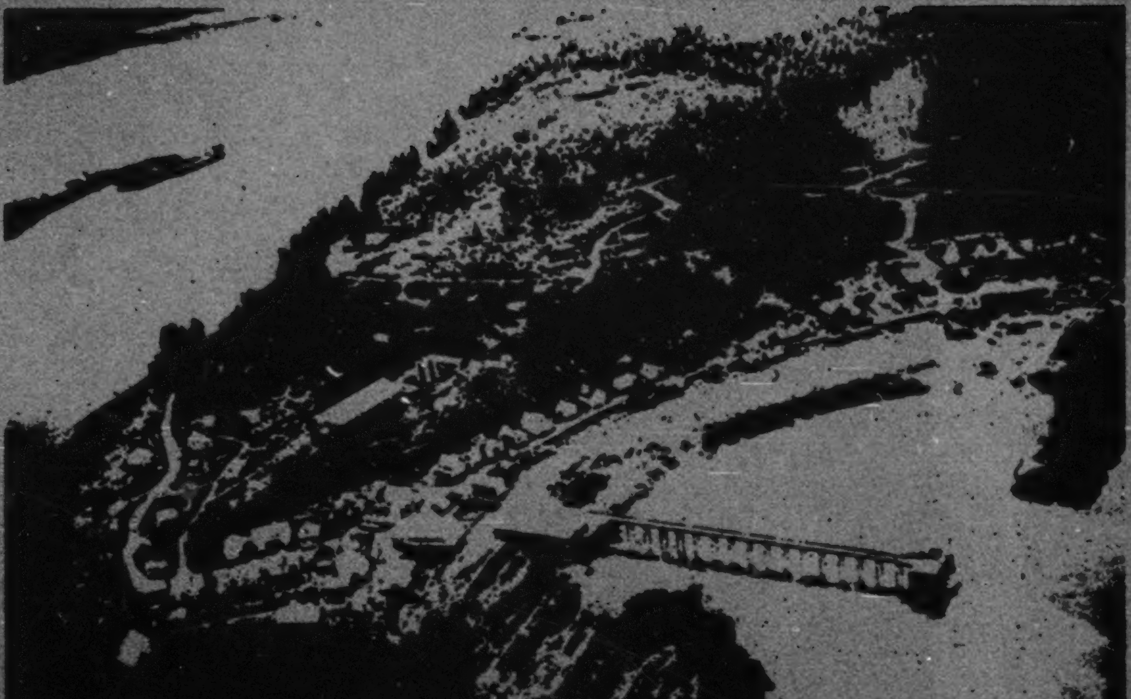
[12] Teleconsult, Inc., "A Study of the Potential of Telecommunications and Educational Technology to Satisfy the Educational Communications Needs of the State of Alaska," Washington, D.C., 1972.

The ATS-6 HET experiment provided the State of Alaska with its first opportunity for utilization of a prototype operational satellite communications system for the transmission of television and multiple voice channels to low-cost earth terminals in rural Alaska. This demonstration served as a model for services which might be made available on an economically feasible basis in the future, and explored the use of advanced communications systems to lessen the negative aspects of living in isolated rural Alaska.

Clearly, the challenge of the ATS-6 HET experiment was a unique one. Alaska can benefit from satellite communications. This experiment helped supply some of the answers in finding the most beneficial applications of satellite technology for Alaska.

This Final Report on the Alaskan HET experiment provides a documented narrative of significant project elements. It is a compilation of essential project information for the National Institute of Education (NIE) as well as all others interested in the development and application of Alaska's ATS-6 HET experiment.

II. OBJECTIVES



II. OBJECTIVES

The State of Alaska's primary objective for the ATS-6 Health/Education experiment was to install and operate an experimental satellite system to give the state technical experience from which to plan future statewide satellite communications systems.

One first step in achieving the state's goal of improved communications was to explore the numerous options in developing a statewide satellite communications network. The best assurance of accurate, long-range planning for the highest cost-effectiveness was direct state experience with satellite technology and programming.

This experiment experience assisted the state in gathering information to knowledgably react to potential domestic satellite communications carriers proposing to serve Alaska. This project further provided the experience necessary for a positive declaration of state needs and requirements. Potential carriers can now plan more effectively to provide services to meet the state's own priority of needs.

As consulting engineers Hammett and Edison stated in their 1971 study "Educational Communications in Alaska:"

> There appear to be no significant technical obstacles to the establishment of communications service in any desired variety and quantity in Alaska within five years. To obtain satisfactory service, the State must first decide what its goals are, then initiate concrete and informed discussions with suppliers, and be prepared to pay a reasonable price. Because of the unusual interconnection problems in Alaska, the State may have to take an unusually active part in defining requirements and leading suppliers to offer what is needed.

Alaska's objective was not to determine if satellites can be useful, but how to most effectively use them. Although it was technically possible prior to the ATS-6 experiment to design satellite based systems to improve communications in Alaska, a better understanding of likely utilization, acceptance, and operating requirements was needed before making any statewide investment of the magnitude required.

Alaska's satellite expertise prior to the ATS-1 and ATS-6 experiments was based primarily on studies made to generate the data necessary for telecommunications planning. But information based on experience gained through tests and demonstrations which simulate operational systems (such as ATS-6) was of much greater value. A system designed to meet demands estimated by studies alone was certain to be utilized differently in actual operation.

Systematic, progressive operational experiments can best serve the state for future systems planning. Experience gained in the ATS-1 program contributed to the development of plans for the ATS-6 experiments. The data obtained through ATS-6 utilization serves as part of the foundation for developing a statewide operational communications system.

The application of technology is an evolutionary process. The educational and medical experiments on ATS-1 developed because the satellite was available; they were not planned before the spacecraft was launched. The HET experiments on ATS-6 have developed in some unforeseen areas. The existence of a means can stimulate the creation of new and flexible techniques.

The ATS-6 Alaska Educational (ALED) experiment was another step in accelerating the application of technology to meet Alaska's telecommunications needs. Consciously trying to accelerate this process has resulted in some mistakes. Yet both the negative and positive results of this experiment contribute to the state's technological learning process, and will benefit future efforts in achieving Alaska's overall communications objectives.

The objective for ATS-6 ALED/HET experiment programming was to provide educators in the state with experience in the development and production of program materials designed to meet the educational needs of rural Alaska.

Application of the ALED experiment was well-suited to providing Alaska with experience in establishing techniques to meet educational objectives for rural Alaska. The experiment allowed the Governor's Office of Telecommunications (GOT) to gain specific technical experience with the operation and maintenance of earth terminals, as well as technical satellite interface. The satellite footprint in Alaska provided an identifiable, rural target population for innovative programming experimentation based on identifiable educational needs. The selection, scheduling and production of programming provided experience in the process of specified educational program development, and the data necessary for determining program requirements and costs. This data increased educators' ability to accurately reflect cost requirements in state planning for proposed operational systems.

Alaska's primary interest was not in precisely measuring the instructional efficiency of various programming and dissemination techniques. Rather, the state was exploring effective ways of utilizing the technological resource at hand. The process was so complex that a short-term demonstration such as the ATS-6/ALED experiment could not provide optimal system design applications. Instead the search was concentrated on the determination of useful techniques in developing appropriate materials for Alaskan satellite distribution.

A further objective in program development for the ATS-6/ALED experiment was to involve users in all phases of actual program content selection and development.

To be effective, a telecommunications system must allow users to generate service requirements. No one else, regardless of knowledge, experience or authority, can accurately predict what users will want. Until users obtain experience with a service, they cannot accurately define their needs. Implementing knowledge gained through experience, before planning is completed, can assure far better service to consumer's than attempting to discover what services users require after the system is installed.

While this experiment provided the state with technical application experience, a consistent objective was to provide users with experience in use of a satellite system as well as with a means to express their own priorities among the variety of applications to be made of a telecommunications satellite system for rural Alaska.

This experiment provided a valuable learning experience about the ways in which the medium affects the message. Specific programming geared to a specific target population required the development of specific and relevant program content.

Another primary programming goal was to involve rural Native Alaskan children and adults with informative and entertaining educational programming they have not had access to previously. Rather than outlining detailed learning goals, the experiment presented programming materials that encouraged reaction, suggestions and involvement by users.

By directly involving users as active participants in this experiment development, interactive, real-time communications led to exploration of techniques valuable in reducing the isolation of small, remote communities. The ALED experiment provided Alaska with an opportunity to test these innovative user-suggested techniques with a minimum financial investment. This allowed experimentation and modification of programming for improved effectiveness. This in turn stimulated acceptance by involved users, and helped determine the suitability of various operational techniques, potential user demand and operating costs.

III. SYSTEM DESIGN

III. SYSTEM DESIGN

The National Space and Aeronautics Administration (NASA) launched the sixth satellite in its Applications Technology Satellite series, ATS-6, on May 30, 1974.

The State of Alaska was one of the experimenters given time on the ATS-6 satellite for technical and operational experimentation. The Governor's Office of Telecommunications (GOT) managed Alaska's ATS-6 Health/Education Telecommunications (HET) experiment. The communications capabilities of the ATS-6 satellite determined the engineering and broadcast system design for all users.

ATS-6 SATELLITE

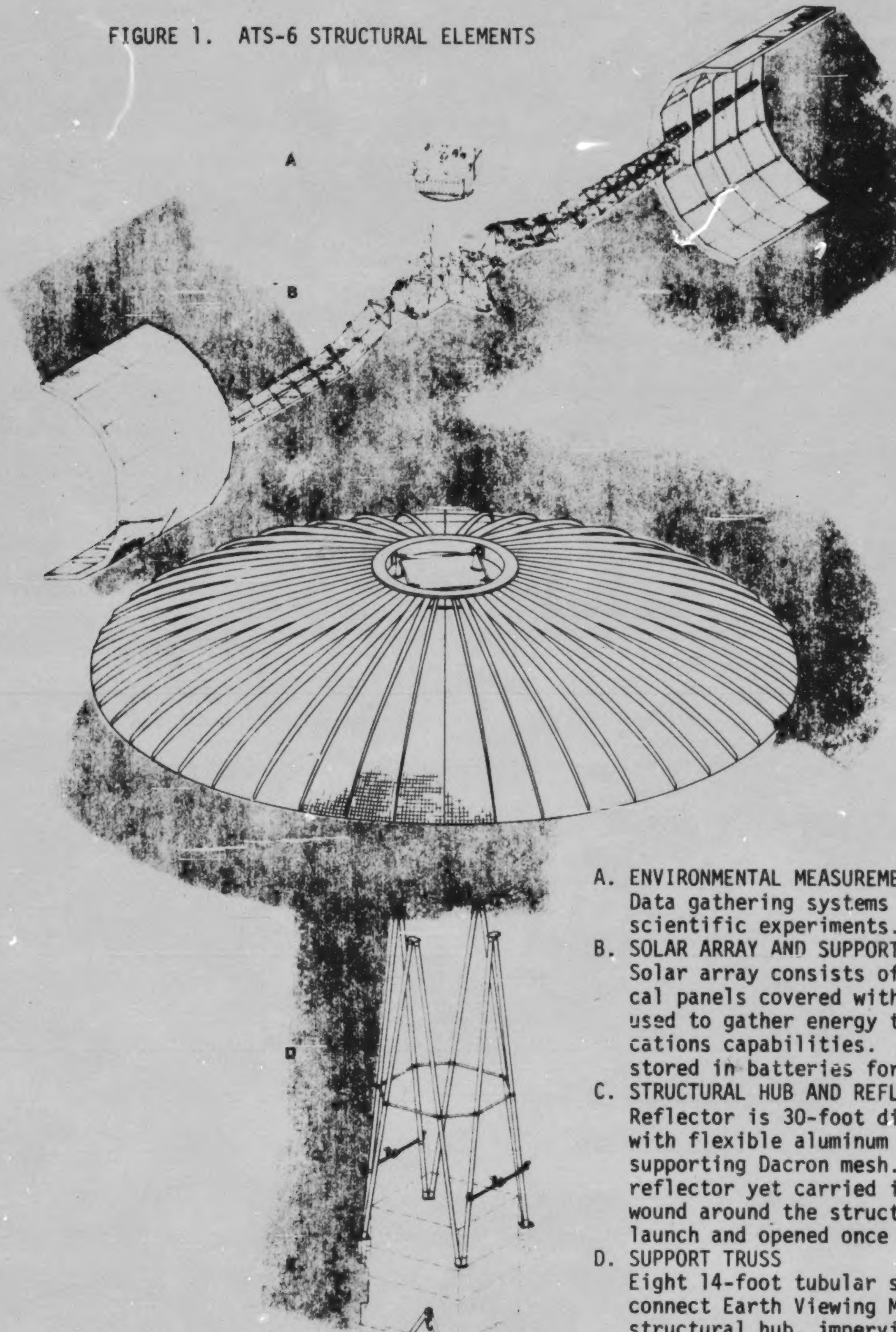
ATS-6 was positioned 22,300 miles above the earth's equator, at 94 W. longitude (west of Ecuador and above the Galapogos Islands). The satellite was in synchronous orbit; it circled the earth every 24 hours, remaining stationary in relation to the earth.

NASA's experimentation with the ATS series of communications satellites was based on the requirement of returning tangible benefits from space research. Earlier communications satellites were relatively small, spinning cylinders with comparatively limited capacities and required large, expensive earth stations.

ATS-6 could be accurately stabilized and pointed, had duplicate and even triplicate back-up systems for all components, and carried high-gain antennas and high-powered transmitters. The data gathering capabilities of ATS-6 covered a wide variety of experimental categories, and it could communicate with inexpensive, simple ground stations. The increased reliability and versatility of ATS-6 gave it both operational and economic advantages over any previous communications satellite.

ATS-6 had six major structural elements (Figure 1).

FIGURE 1. ATS-6 STRUCTURAL ELEMENTS



A. ENVIRONMENTAL MEASUREMENT EXPERIMENTS
Data gathering systems for eight scientific experiments.

B. SOLAR ARRAY AND SUPPORTING BOOMS
Solar array consists of hemi-cylindrical panels covered with solar cells used to gather energy to power communications capabilities. Excess energy stored in batteries for potential use.

C. STRUCTURAL HUB AND REFLECTOR
Reflector is 30-foot diameter antenna with flexible aluminum radial ribs supporting Dacron mesh. The largest reflector yet carried in space, it wound around the structural hub during launch and opened once in orbit.

D. SUPPORT TRUSS
Eight 14-foot tubular supports to connect Earth Viewing Module and structural hub, impervious to temperature changes.

E. EARTH VIEWING MODULE
Houses experiments and spacecraft subsystems.

F. ADAPTER

The satellite carried two high-powered transmitters operating in the 2.5 GHz range. Each transmitter worked into a 30 foot parabolic reflector to produce a northern and southern beam, forming a "footprint" on the earth, approximately 500 miles long and 300 miles wide.

All satellite communications within Alaska occured on one of the S-band frequencies (2247.5 MHz, transmit and 2670 MHz, receive). The C-band capability was used by the Network Control Center (NCC) in Denver in its communications with ATS-6 and for monitoring all HET experiment operations. A comprehensive switching capability within the spacecraft allowed signals from Alaska's S-band uplink to be received, processed and transmitted to NCC on the C-band frequency. This capability was also used for translating NCC C-band uplinks to the S-band frequencies for Alaskan reception.

A simplified diagram showing only the transponder components pertinent to Alaska operations is given in Figure 2.

EARTH TERMINALS

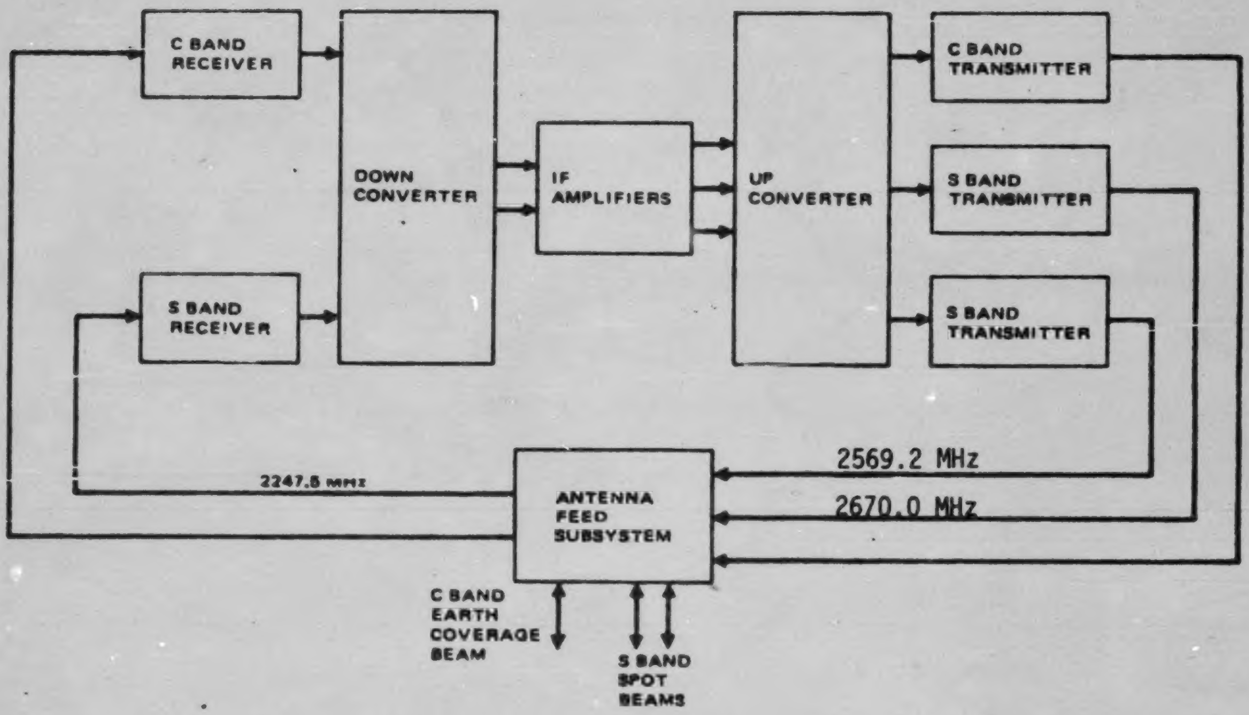
The ATS-6 ground station network in Alaska included 19 small earth terminals, both intensive (receive-only) and comprehensive (receive and transmit) terminals.

Intensive

The fourteen intensive terminals in Alaska had the capability of receiving video and 4 channels of associated audio, and of two-way voice communications via a VHF channel on ATS-1.

Figure 3 illustrates in block diagram the components of an intensive earth terminal. The equipment necessary for a receive-only terminal consisted of an antenna, outdoor unit, connecting RF cable, indoor unit, video cable, audio cable, and a TV monitor (Figure 4).

FIGURE 2. ATS-6 Transponder Elements Used in HET Experiment


C BAND RECEIVER
S BAND RECEIVER
DOWN CONVERTER
IF AMPLIFIERS
UP CONVERTER
C BAND TRANSMITTER
S BAND TRANSMITTER
S BAND TRANSMITTER
2569.2 MHz
2670.0 MHz
2247.5 MHz
ANTENNA FEED SUBSYSTEM
C BAND EARTH COVERAGE BEAM
S BAND SPOT BEAMS

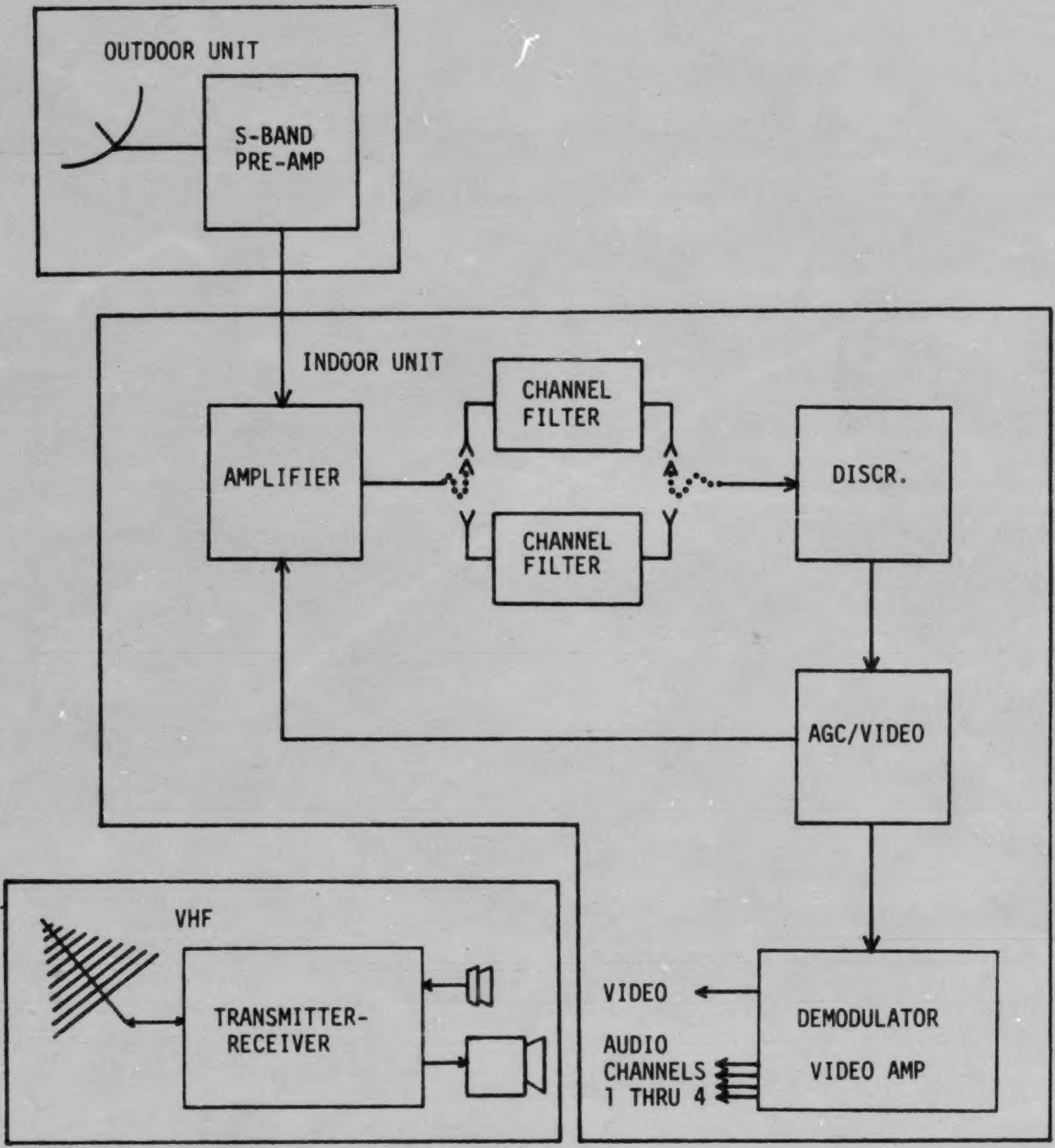

OUTDOOR UNIT
S-BAND PRE-AMP
INDOOR UNIT
AMPLIFIER
CHANNEL FILTER
CHANNEL FILTER
DISCR.
AGC/VIDEO
DEMODULATOR
VIDEO AMP
VIDEO
AUDIO CHANNELS 1 THRU 4
VHF
TRANSMITTER-RECEIVER

FIGURE 3. INTENSIVE EARTH TERMINAL BLOCK DIAGRAM

The antenna (Figure 5) consisted of a 10-foot diameter parabolic reflector, helical feed and mount. The reflector was constructed of fiberglass sections, coated to protect the metalized surface and diffuse optical reflections to protect the feed from solar overheating. The feed (or pickup) was a cylindrical helix located at the focus by means of a rigid coax support which extends from the apex of the reflector. Rigidity for the feed was provided by spring tensioned support wires from four points near the periphery of the reflector. The coax feed support was terminated behind the reflector with a coaxial connector for connection to the S-band pre-amp in a receive-only terminal.

The antenna was supported by a galvanized steel yoke attached to a pivot directly beneath the center of the antenna. Braces from the upright arms of the yoke connected to the azimuth adjustment slide on the rear mounting plate. The antenna could be adjusted ±20 in azimuth by means of the rear adjustments. A telescoping pole extending from the top of the reflector to the rear mount enabled elevation adjustment.

The receiver system consisted of a microwave low noise amplifier which mounted directly to the antenna and was referred to as the outdoor unit; a receiver/demodulator, located indoors, was referred to as the indoor unit.

The outdoor unit contained the antenna feed, microwave amplifier and, at comprehensive terminals, an optional filter to remove possible interference from the transmit antenna. The amplifier was a microcircuit module containing 2 thin film low noise amplifiers and a bandpass filter to minimize interference from sources in adjacent bands.

The indoor unit contained additional amplification, bandpass filters, limiter-

FIGURE 4. INTENSIVE TERMINAL EQUIPMENT

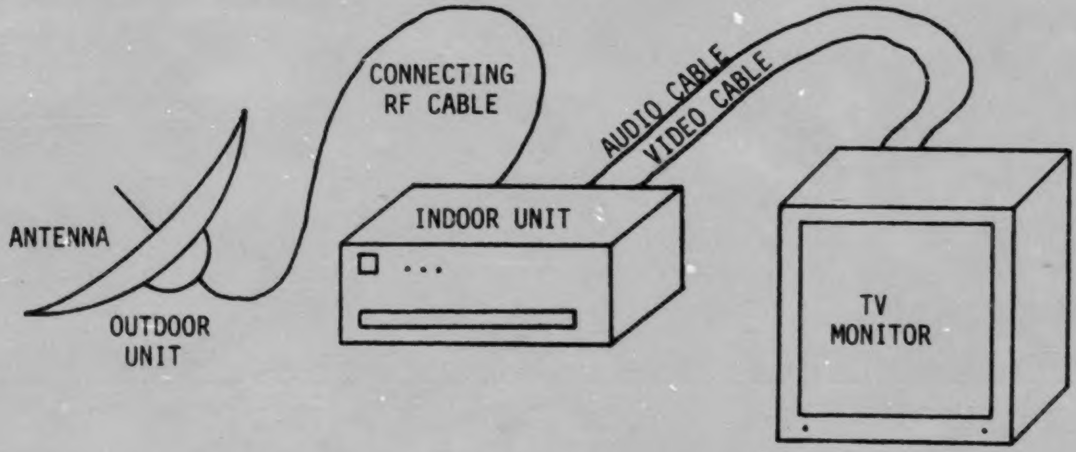
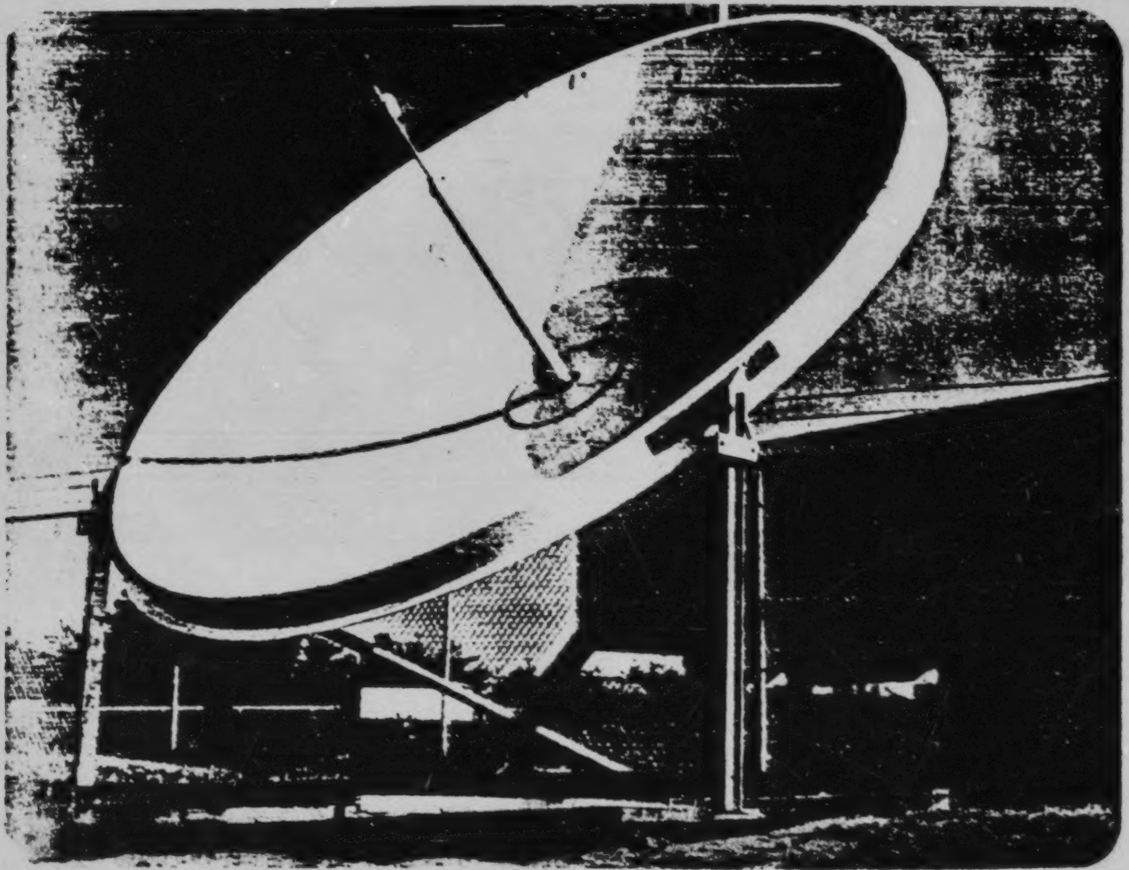

CONNECTING
RF CABLE
AUDIO CABLE
VIDEO CABLE
ANTENNA
INDOOR UNIT
OUTDOOR
UNIT
TV
MONITOR

FIGURE 5. 10-FOOT S-BAND ANTENNA



discriminators, video amplifiers and filters, and four audio subcarrier demodulators. These subcarriers were located above the video baseband from 4.64 to 5.36 MHz. The multiplexed video signal and audio subcarriers produced an FM signal with a 20 MHz bandwidth.

A transmission line connected the outdoor and indoor units. Its length and type were determined by the application, however its total insertion loss was nominally 6 to 8 dB at 2600 MHz with 50 ohm type N connectors. In Alaska all terminals were equipped with 100-foot rf cables. This length was selected because the equipment had to be ordered before individual site installation details could be worked out. (100-foot cables were the longest available as equipment options.) Video and audio cables connected the indoor unit with the TV monitor, for both video and audio broadcast reception.

Significant parameters of intensive terminals are summarized in Table 1. The cost of an intensive terminal was approximately $8000.

Intensive terminals were located in Allakaket, Anchorage, Angoon, Aniak, Chuathbaluk, Craig, McGrath, Minto, Nenana, Nikolai, Petersburg, Sleetmute, Valdez and Yakutat.

Comprehensive

The five comprehensive earth terminals in Alaska had the same receive equipment and capabilities as intensive terminals, plus a completely independent transmit terminal with equipment to provide the capacity to transmit video and 4 channels of associated audio. The additional equipment required at a comprehensive terminal included an antenna, indoor unit, outdoor unit, and connecting audio and video cable.

TABLE 1. FIELD STATION CHARACTERISTICS

Antenna	
Diameter	10 feet (~3 meters)
Receive gain, 2500 MHz	≥35 dB
Transmit gain, 2250 MHz	≥34 dB
Receive polarization	Left circular
Transmit polarization	Right circular
Elevation angle range	0 to 70 degrees
Azimuth angle range	± 20 degrees
Pointing deflection, 60 mph wind	≤0.5 degrees
Wind survival velocity	≥125 mph
Receiver	
Channel frequencies	2569.2 and 2670 MHz
Channel bandwidth, -1 dB	30 MHz, nominal
Noise figure	≤4.5 dB
Input dynamic range	-90 to -75 dBm
Video noise bandwidth	23 MHz, nominal
Video basebandwidth	4.2 MHz, nominal
Video output level, 75 ohms	1v p-p, nominal
Audio output frequency range, -3 dB	30 Hz to 10 kHz
Audio output power, 600 ohms	0 dBm, nominal
Voice output frequency range, -3 dB	300 Hz to 3.4 kHz
Voice output power, 600 ohms	0 dBm, nominal
Power Supply	24 vdc or 117 vac, nominal

The indoor unit included circuitry for processing video and audio into composite baseband with four audio subcarriers. The outdoor unit included S-band modulator and power amplifier. A block diagram of these components is shown in Figure 6.

Figure 7 illustrates the equipment necessary for a transmitting terminal; antenna, outdoor unit, connecting rf cable, indoor unit, video and audio cable, and video and audio source. Figure 8 shows the additional equipment necessary for minimal transmission origination capability.

The only difference in receive and transmit antenna design was the polarization of the feed. The outdoor unit consisted of the transmission output cable, an rf amplifier/modulator mounted on the antenna, environmental control electronics, and a filter to reduce spurious radiation. The indoor unit included the video baseband signal processor and audio subcarrier modulators.

The technical characteristics of a transmit terminal are given in Table 2. Video transmit equipment added approximately $50,000 to the cost of a field terminal.

The five transmit terminals were located in Fairbanks, Juneau, Tanana, Galena and Fort Yukon. Fort Yukon was involved exclusively in the medical portions of the ATS-6 experiment. Tanana and Galena were also principally medical experiment participants, with the terminal site located at the local health clinic, and a video monitor in the school to enable reception of ALED programming. Fairbanks was the principle origination point for technical broadcast, with the Juneau terminal providing backup in case of Fairbanks terminal equipment failure, as well as some programming originatio

VHF

In addition to the ATS-6 video receiving and/or transmitting equipment, each

FIGURE 6. TRANSMIT EARTH TERMINAL BLOCK DIAGRAM

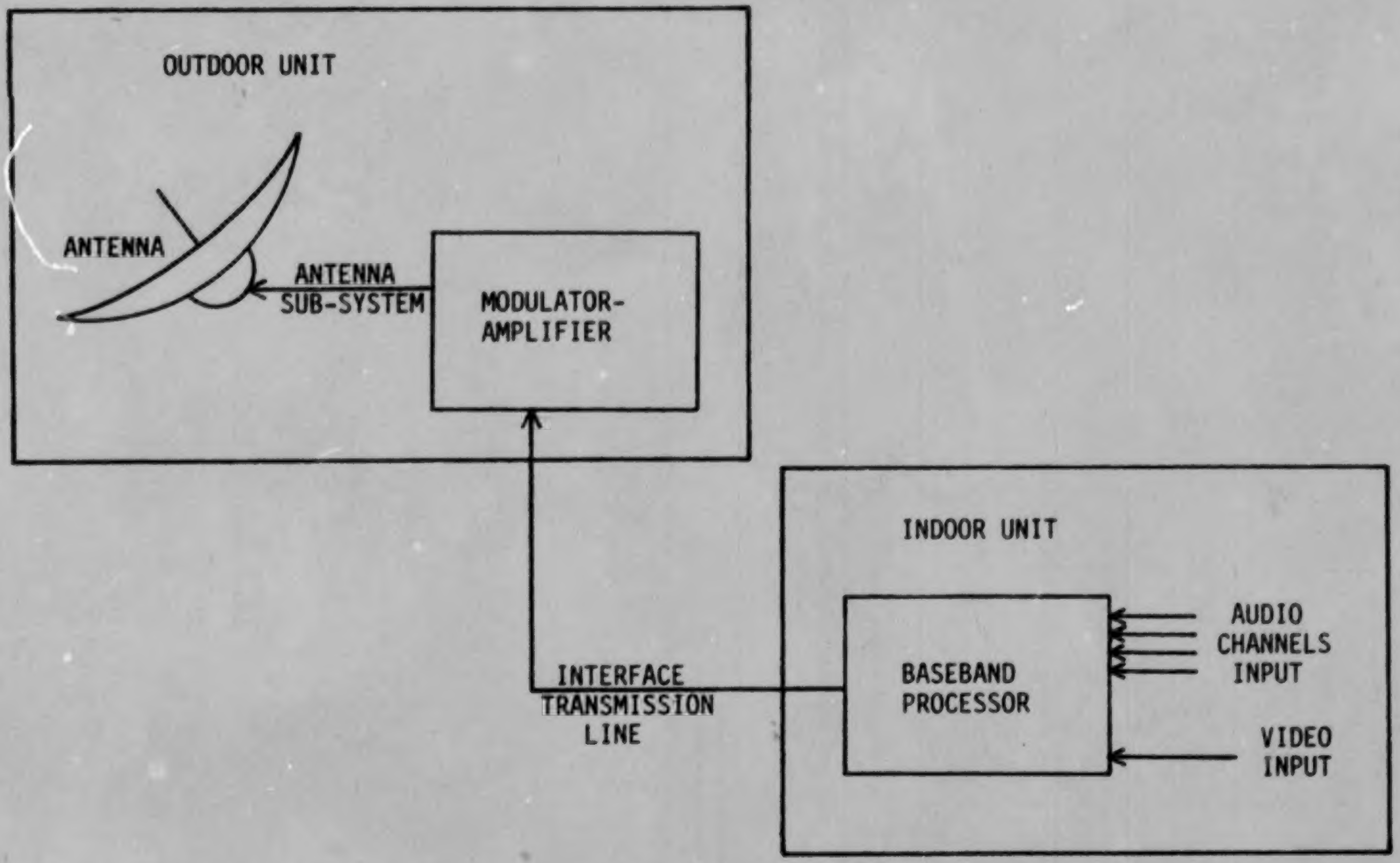

OUTDOOR UNIT
ANTENNA
ANTENNA SUB-SYSTEM
MODULATOR-AMPLIFIER
INTERFACE TRANSMISSION LINE
INDOOR UNIT
BASEBAND PROCESSOR
AUDIO CHANNELS INPUT
VIDEO INPUT

FIGURE 7. TRANSMIT EQUIPMENT

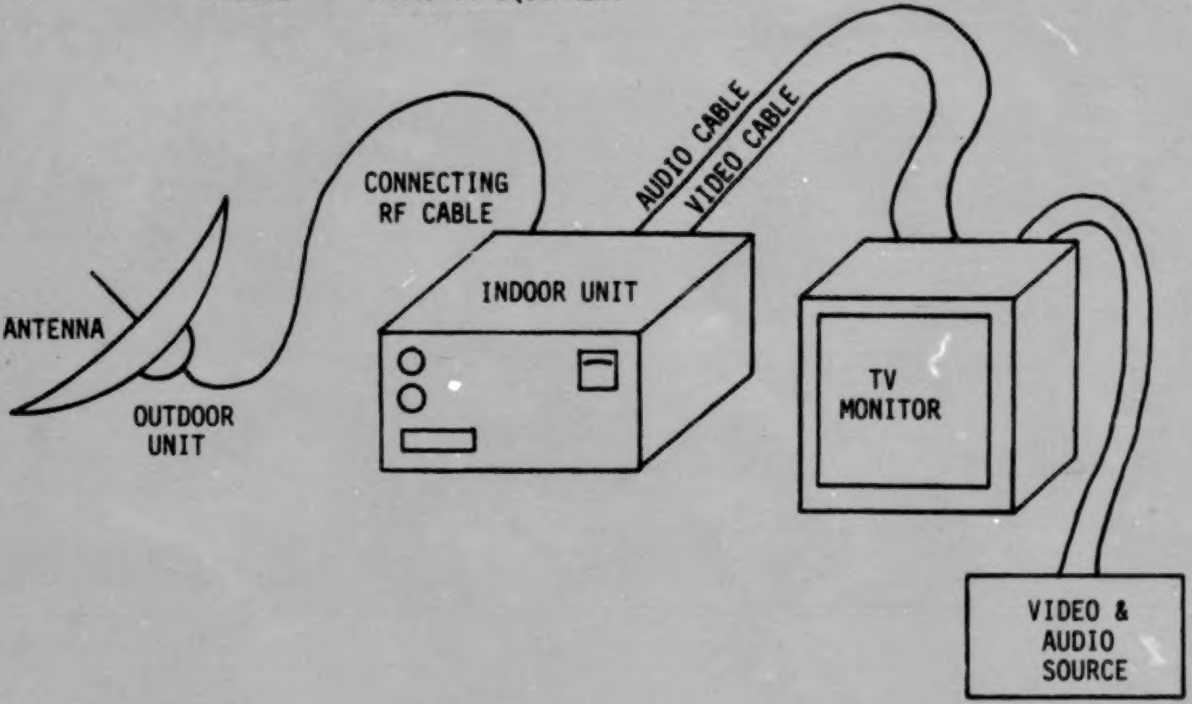

AUDIO CABLE
VIDEO CABLE
CONNECTING RF CABLE
INDOOR UNIT
ANTENNA
OUTDOOR UNIT
TV MONITOR
VIDEO & AUDIO SOURCE

FIGURE 8. VIDEO TRANSMIT EQUIPMENT

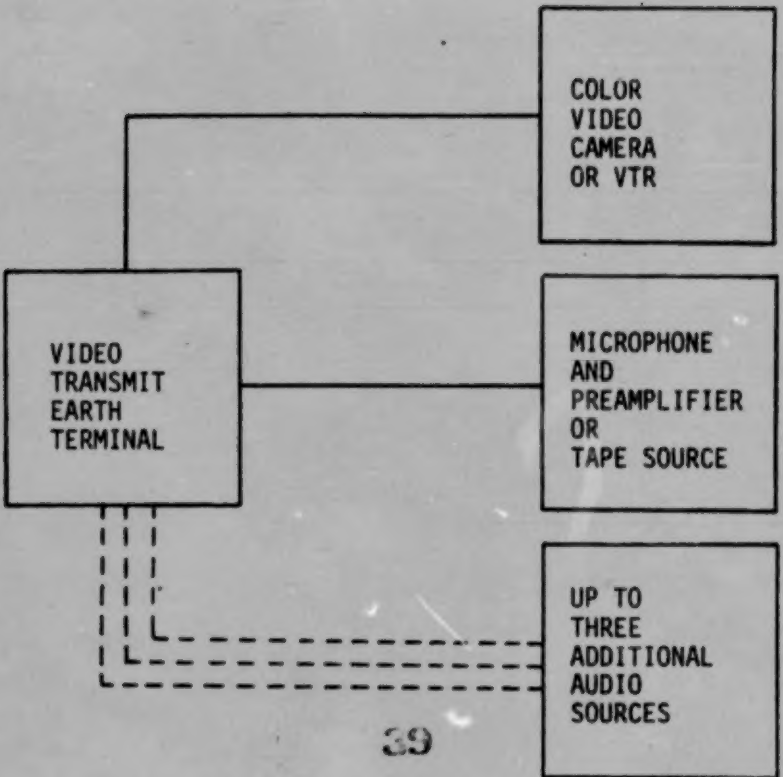

COLOR VIDEO CAMERA OR VTR
VIDEO TRANSMIT EARTH TERMINAL
MICROPHONE AND PREAMPLIFIER OR TAPE SOURCE
UP TO THREE ADDITIONAL AUDIO SOURCES

TABLE 2. TELEVISION TRANSMIT STATION CHARACTERISTICS

Antenna	
Same as in Table 2	
Receiver	
Same as in Table 2	
Voice Channel Transmitter	
Same as in Table 2	
Television Transmitter	
Channel frequency	2247.5 MHz
Power output to feed	50 watts, nominal
Video input level, 75 ohms	1 v p-p, nominal
Video basebandwidth	4.2 MHz
Audio subcarrier frequencies	4.66, 4.83, 5.06 and 5.36 MHz
Subcarrier peak-to-peak deviation	106 kHz, nominal
Audio input power, 600 ohms	0 dBm, nominal
Audio frequency range	30 Hz to 10 kHz
Composite television baseband peak-to-peak deviation	20 MHz, nominal
Power Supply	24 vdc or 117 vac, nominal

earth terminal had a VHF transmitter and receiver, and helical, high-gain directional antenna. This equipment was used in conjunction with NASA's ATS-1 satellite, to provide a single voice channel (149.22 MHz uplink, 135.6 MHz downlink) between each earth terminal in Alaska, the ATS Operations Control Center (ATSOCC), and those medical facilities which were taking part in the medical experiments of ATS-6.

BROADCAST DESIGN

Operational Modes and Distribution

Even though the ATS-6 system was experimental and available for a limited period, its configuration and manner of operation were designed to simulate operational conditions to the fullest extent possible.

Within the nominal 30 MHz bandwidth of the ATS-6 transponder many types of signals could be transmitted, as format was determined solely by the transmitting earth terminals. A standard format developed for the HET experiments is shown in Figure 9. A television signal was frequency modulated on the carrier to produce a 20 MHz wide signal. The television signal comprised a 4.2 MHz video baseband plus four FM subcarriers (as opposed to one in conventional practice) to provide multiple 10 KHz program channels.

Figure 10 shows components of the ground system, indicating audio communications links required for operational control. ATS-6 operations were ultimately controlled by ATSOCC located at the Goddard Space Flight Center and affected through the NASA ground stations at Rosman, North Carolina and Mojave, California. During actual transmission of the HET experiments, control of the ground equipment was performed

FIGURE 9. RF SPECTRUM OF COMPOSITE TELEVISION

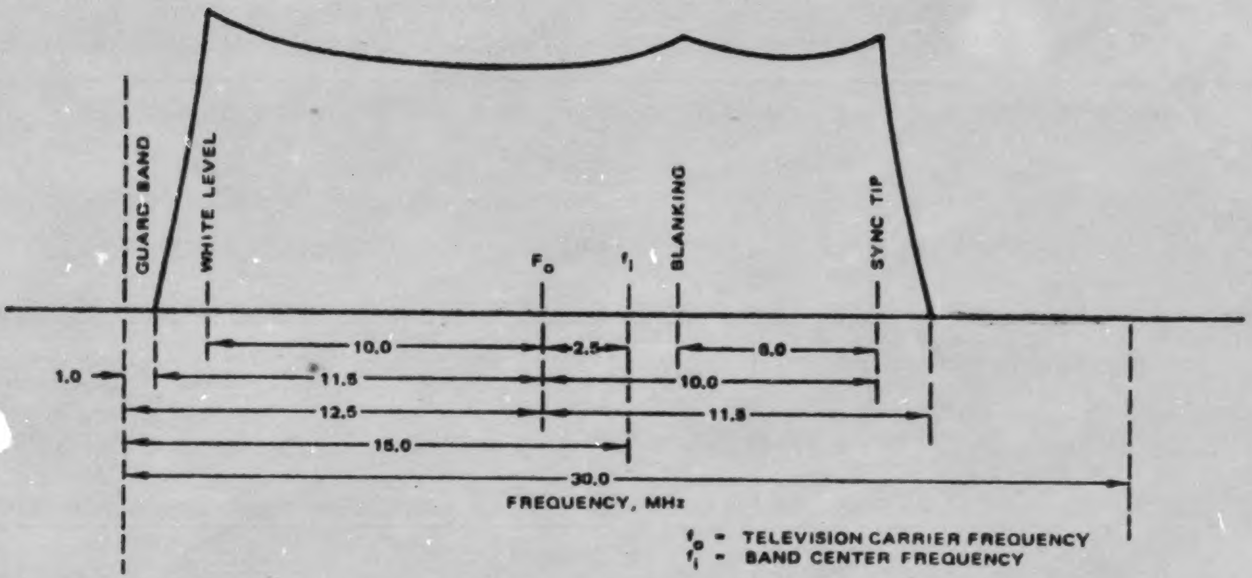
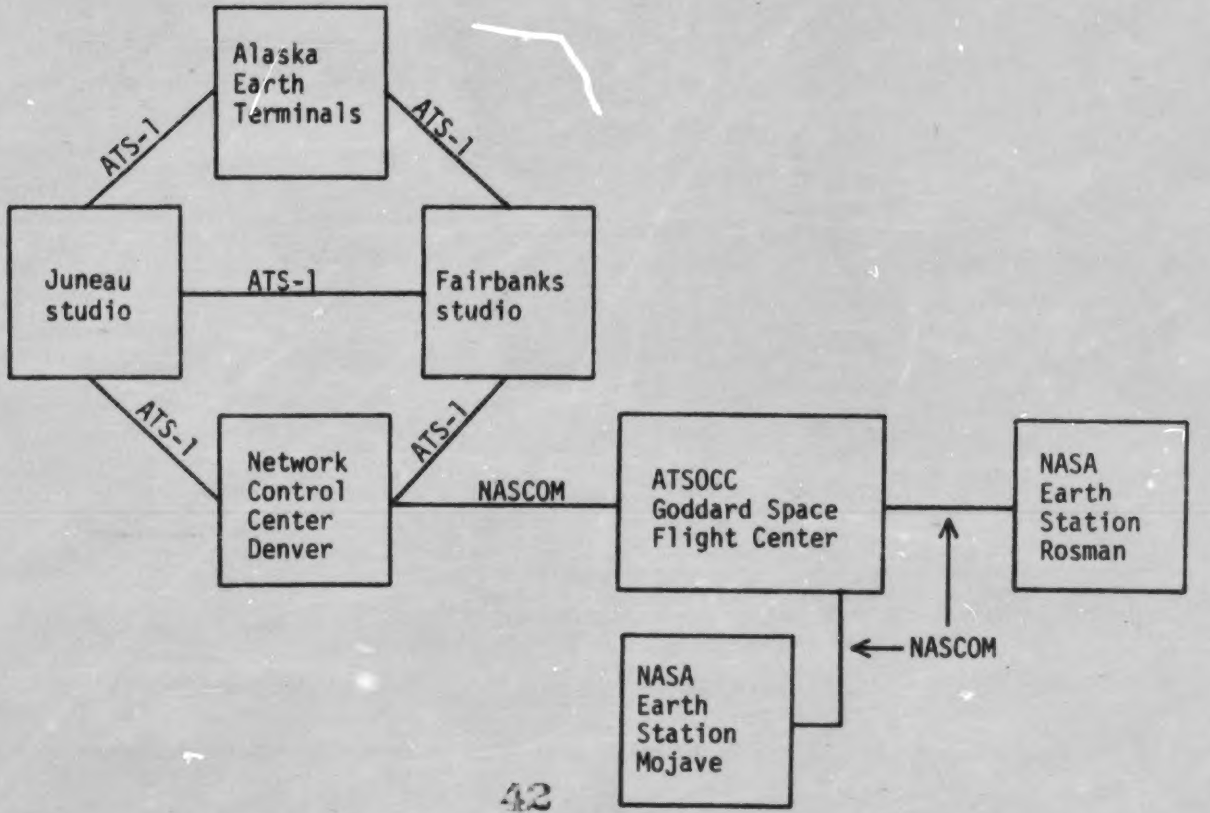

GUARD BAND
WHITE LEVEL
F_o
f_i
BLANKING
SYNC TIP
10.0
2.5
6.0
1.0
11.5
10.0
12.5
11.5
15.0
30.0
FREQUENCY, MHz
f_o = TELEVISION CARRIER FREQUENCY
f_i = BAND CENTER FREQUENCY

FIGURE 10. ATS-6 ALASKA OPERATIONS COMMUNICATIONS SYSTEM


Alaska Earth Terminals
ATS-1
ATS-1
Juneau studio
ATS-1
Fairbanks studio
ATS-1
ATS-1
Network Control Center Denver
NASCOM
ATSOCC Goddard Space Flight Center
NASA Earth Station Rosman
NASCOM
NASA Earth Station Mojave

for NASA by the Federation of Rocky Mountain States (FORMS) at NCC in Denver. The NCC interfaced directly with ATSOCC and the transmitting Alaskan studio.

Communications Performance

The extreme distance between Alaska and the subsatellite point at 94 degrees W. longitude imposed propagation losses greater than encountered under more favorable circumstances. Furthermore, the receiving system noise temperature was somewhat higher due to increased pickup of earth radiation caused by the low antenna elevation angles (Table 3). These effects were taken into account in the video performance summary in Table 4. The system noise temperature had been increased approximately 100 degrees which effectively reduced the station G/T from 7.1 to 6.4 dB. Acceptable performance could be obtained over the spacecraft field of view, even with a 90 dB Hz uplink carrier-to-noise power ratio density (C/N). The overall C/N in this case was 13.5 dB, well above the measured dynamic threshold of the receiver demodulator of 10.5 dB. It is noted, however, that no margins or other allowances for degradations were incorporated into the performance summary.

System Operation

A step-by-step description of a typical educational broadcast period should serve to illustrate how the ATS-6 system was operated and interfaced in Alaska.

1. Fifteen minutes prior to program start, Juneau and Fairbanks contacted the NCC in Denver via the ATS-1 voice circuit to indicate readiness to broadcast. When the NCC gave permission to radiate either Fairbanks or Juneau began transmitting a color test pattern. When the first station to radiate was satisfied that the transmitter was operating properly and that the antennas were pointed correctly, that station

TABLE 3. ANGLE OF ANTENNA ELEVATION TO SATELLITE*

Alaska HET Experiment Site	Azimuth, Degrees	Elevation, Degrees
Allakaket	119.213	3.274
Anchorage	120.696	7.047
Angoon	134.557	15.727
Aniak	118.816	2.697
Chuathbaluk	110.260	1.846
Craig	135.353	17.813
Fairbanks	123.616	5.935
Ft. Yukon	126.333	5.75
Galena	114.818	2.530
Juneau	135.007	15.213
McGrath	115.752	3.840
Minto	122.231	5.389
Nenana	122.261	5.600
Nikolai	117.101	4.427
Petersburg	136.016	16.905
Sleetmute	114.054	3.712
Tanana	119.593	4.194
Valdez	129.177	8.632
Yakutat	130.100	12.255

* Satellite at 94° W longitude, 0° inclination

Table 4. Video Downlink Performance - 2569.2 MHz

EIRP (over 0.85 degree field of view)		48.9 dBw
Path loss (subsatellite point)		-191.8 dB
Additional loss for Alaska		-1.3 dB
Earth station antenna gain		35.0 dB
Received carrier power, C		-109.2 dBw
Boltzmann's Constant		-228.6 dBw/ Hz-K
System noise temperature		28.6 dBk
Noise power density, N_o		-200.0 dBw/Hz
C/N_o (downlink)	90.8	90.8 dBHz
C/N_o (uplink)	90.0	95.0 dBHz
C/N_o (overall)	87.3	89.3 dBHz
Bandwidth (23 MHz)	73.8	73.8 dBHz
C/N	13.5	15.5 dB
Video signal-to-noise ratio*	99.2	51.2 dB

*S/N = C/N +35.7 dB

turned off its transmitter and the other station began its test. These test transmissions were coordinated between the two Alaska stations via the ATS-1 voice channel. During this test period, certain sites were called via ATS-1 and requested to report signal strength, picture quality and audio quality. These reports were recorded at Juneau and Fairbanks.

2. Approximately 3 minutes prior to program start, Fairbanks began transmitting a back-timed tape showing a slide of a Native youngster with a minute and second countdown superimposed on the picture, and a program level music track which enabled viewers to make video and audio adjustments to their monitors.

3. Program start. Fairbanks transmitted the pre-taped program (approximately 20 minutes long).

4. At the end of the pre-recorded portion of the program, Fairbanks indicated that their transmitter would be turned off. This was coordinated via the ATS-1 circuit. The Fairbanks operator gave a one-two-three countdown; on the count of two Juneau came up, on the count of three Fairbanks went down. This overlap compensated for the satellite circuit delay and minimized the no-signal period.

5. The host teacher at Juneau was on-camera live. She usually discussed the program briefly or amplified certain material, then called on particular schools for responses to particular questions. For interaction the host teacher listened to responses from the remote areas through earphones, eliminating acoustic feedback that might be caused by speakers in the studio.

During interactive portions of the program, two ATS-6 audio channels were utilized; channel 1 carried the studio audio (teacher) plus responses coming in via ATS-1.

This enabled all sites to hear both sides of interactive conversations over their TV monitors. Channel 2 carried the studio audio (teacher) only. The interacting site switched to channel 2, eliminating the possibility of a feedback loop from the TV speaker to the classroom microphone used for interaction.

6. At the end of the post-program discussion and interaction, Juneau transmitted a slide or sign indicating "break time." This continued for approximately 2 to 5 minutes to allow viewing groups to be changed prior to the second program.

7. At the time the second program was scheduled to begin, the one-two-three countdown was repeated and Fairbanks came up on two with the second pre-taped educational program, and Juneau went down on the count of three.

8. When the pre-taped program was finished, operation was again switched to Juneau for discussion and interaction with the second host teacher, on camera live.

9. At the end of the second interactive period, NCC was notified via ATS-1 that the Alaska Education program was completed, and the satellite was turned over to the next experimenter.

Interaction

The live interaction mode of operation between terminal sites and broadcasting studio was developed through a trial and error process to allow maximum utilization at terminal sites.

Original design called for VHF talk-back capabaility over ATS-1 through the digital coordinator located at each terminal site. This design called for responding terminals to contact NCC/Denver, indicating the desire to talk to either the Juneau or Fairbanks broadcasting studio. NCC then activated the VHF/ATS-1 link and told the

Alaskan studio that a site wished to respond. NCC then told the site to go ahead, and the studio and terminal site verbal link was complete and interactive.

This system was never instituted in Alaska, although digital coordinators were installed in all Alaska terminal sites.

Because the necessary equipment was not completely operational at the time Alaska programming started, a more direct system was established and used for all VHF audio interaction in Alaska. All sites were instructed by GOT to manually enable VHF operation, without the use of digital coordination through NCC. Since this system proved to be satisfactory for the comparatively small Alaskan network, it was retained for the duration of the experiment.

A step-by-step description of a typical interaction broadcast should serve to illustrate this system operation.

1. The Juneau studio began broadcasting the interaction segment of a health education program with 2 audio channels. Channel 2 contained only the audio being generated from the Juneau studio. ATS-6 channel 1 transmitted a composite audio signal, both studio and re-transmitted, selected audio from terminal sites (received over ATS-1).

2. The host teacher for the health education series was on-camera live from the Juneau studio. In discussing the health program just completed, the studio teacher asked Allakaket to respond to a specific question about the program.

3. In response, Allakaket turned on its VHF equipment, switching its ATS-6 audio from Channel 1 to channel 2, to enable it to hear the Juneau studio but avoid feedback when it began its own audio transmission.

4. Allakaket, over ATS-1, called the Juneau studio. "Juneau this is Allakaket calling."

5. The host teacher, listening through headphones, acknowledged Allakaket's call and discussed her question with them. Juneau studio now re-transmitted the ATS-1 audio over ATS-6 audio channel 1, along with the teacher's voice.

6. When the call from Allakaket was completed, ATS-1 channel 1 re-transmission from Juneau ended, and Allakaket switched its ATS-6 audio channel back from 2 to 1, to enable it to hear the host teacher and any calls from any other sites.

IV. SITE SELECTION

IV. SITE SELECTION

The ATS-6 footprint used in the HET experiment was much smaller than the state of Alaska (Figure 11). Only 63 of the state's approximately 270 communities were within the southeastern, southcentral, and interior areas covered by the satellite footprint.

The 63 communities (listed in Table 5) did not represent a complete cross-section of Alaska. No Inupiaq Eskimo communities were included and only a few Yupik Eskimo communities, although the Eskimos make up the largest minority in the state. Two-thirds of these footprint communities have telephones, and almost half are not as isolated as more northern and western communities not included in the footprint.

While remoteness of a community was not a sole determinant in selection, it was felt to be significant to the experiment, because it is in communities isolated from towns and cities that satellite technology is so urgently required and can make the most significant contribution. Since most of the remote and isolated villages in the state are predominately Eskimo, Aleut and Indian, such culturally different communities were the focus of much of the Alaska HET experiment.

The site selection guidelines outlined in the 1972 Program Plan were:

1. The anticipated significance of satellite technology in meeting the needs of the site.

2. A population large enough (perhaps 150 persons) to develop ample data.

3. The degree of interest shown by prospective participants in having a part of the experiment.

4. The availability of a school, community hall, or other facility suitable for public use.

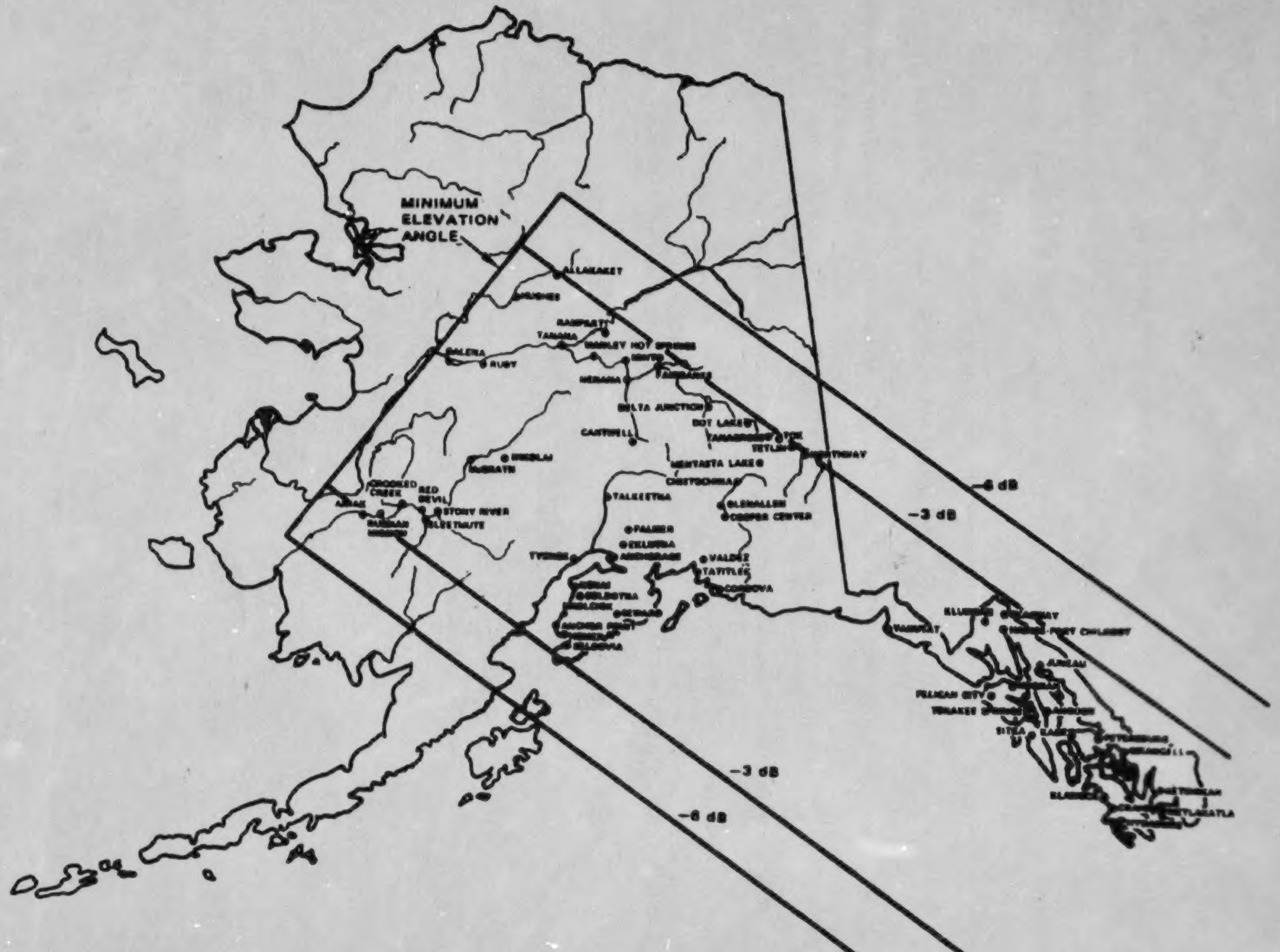

MINIMUM
ELEVATION
ANGLE
ALLAKAKET
HUGHES
RAMPART
TANANA
MANLEY HOT SPRINGS
GALENA
RUBY
NENANA
FAIRBANKS
DELTA JUNCTION
DOT LAKE
TANACROSS
TOK
TETLIN
NORTHWAY
CANTWELL
NIKOLAI
McGRATH
MENTASTA LAKE
CHISTOCHINA
CROOKED CREEK
RED DEVIL
ANIAK
STONY RIVER
SLEETMUTE
TALKEETNA
GLENNALLEN
COPPER CENTER
PALMER
EKLUTNA
TYONEK
ANCHORAGE
VALDEZ
TATITLEK
CORDOVA
KENAI
SOLDOTNA
NINILCHIK
SEWARD
ANCHOR POINT
SELDOVIA
YAKUTAT
KLUKWAN
SKAGWAY
HAINES-PORT CHILKOOT
JUNEAU
PELICAN CITY
TENAKEE SPRINGS
SITKA
KAKE
PETERSBURG
WRANGELL
KLAWOCK
KETCHIKAN
METLAKATLA
−6 dB
−3 dB
−3 dB
−6 dB

FIGURE 11. LOCATION OF COMMUNITIES WITHIN ATS-6 BEAMWIDTH

TABLE 5. COMMUNITIES COVERED BY ATS-F ANTENNA BEAM

Community	Population	Regional Association*	Telephone	On Highway	School**	Angle to Satellite***		Elevation of Obstruction
						Azimuth, Degrees	Elevation, Degrees	
Allakaket	174	TCC			SOS	119.213	3.274	
Anchorage	84,237		Yes	Yes	ISD	120.696	7.047	
Anchor Point	171		Yes	Yes	ISD	118.527	6.925	1.0
Angoon	395	THCC	Yes		SOS	134.557	15.727	
Aniak	205	AVCP			SOS	118.816	2.697	
Cantwell	62	TCC	Yes	Yes	SOS	122.111	6.279	
Chistochina	28	CRNC	Yes	Yes	SOS	126.038	8.392	
Copper Center	206	CRNC	Yes	Yes	SOS	125.271	8.519	
Cordova	1,128	CNA	Yes		ISD	129.479	9.153	
Craig	273	THCC	Yes		ISD	135.353	17.813	
Crooked Creek	59	AVCP			SOS	113.185	3.215	1.3
Delta Junction	703	TCC	Yes	Yes	SOS	125.356	7.119	
Dot Lake	56	TCC	Yes	Yes	SOS	127.013	7.804	
Eklutna	25	CINA	Yes	Yes	–	121.263	7.141	3.9
Fairbanks	18,311		Yes	Yes	ISD	123.616	5.935	
Galena	302	TCC	Yes		SOS	114.818	2.530	
Glenallen	363	CRNC	Yes	Yes	SOS	125.079	8.321	
Haines - Port Chilkoot	463	THCC		Yes	ISD	134.246	14.136	
Homer	1,083	CINA	Yes	Yes	ISD	118.771	7.125	
Hoonah	748	THCC	Yes		ISD	133.900	14.950	
Hughes	85	TCC			SOS	117.599	2.955	3.8
Hydaburg	251	THCC	Yes		ISD	134.501	20.391	
Juneau	6,797		Yes		ISD	135.007	15.213	
Kake	455	THCC	Yes		ISD	135.060	16.378	
Kenai	3,533	CINA	Yes	Yes		119.261	6.806	
KetchiKan	6,483		Yes		ISD	136.865	18.541	
Klawock	251	THCC	Yes		ISD	135.541	17.783	
Klukwan	112	THCC	Yes	Yes	BIA	133.846	13.847	
Manley Hot Springs	34	TCC			SOS	120.860	4.798	
McGrath	241	TCC	Yes		SOS	115.752	3.840	
Mentasta Lake	40	CRNC		Yes	SOS	127.035	8.533	
Metlakatla	1,050	THCC	Yes		SOS	136.872	18.736	10.5
Minto	161	TCC			SOS	122.231	5.389	
Nenana	362	TCC	Yes	Yes	ISD	122.261	5.600	
Nikolai	112	TCC			SOS	117.101	4.427	
Ninilchik	169	CINA	Yes	Yes	ISD	118.777	6.882	
Northway	40	TCC	Yes	Yes	SOS	128.834	9.170	
Palmer	1,181	CINA	Yes	Yes	ISD	121.566	7.188	
Pelican City	135	THCC	Yes		ISD	133.086	14.753	
Petersburg	2,042	THCC	Yes		ISD	136.016	16.905	
Rampart	49	TCC			SOS	121.423	4.710	2.7
Red Devil	81	AVCP			SOS	113.932	3.623	0.3
Ruby	179	TCC			SOS	116.198	3.090	
Russian Mission	146	AVCP			SOS	110.260	1.846	
Seldovia	460	CINA	Yes		ISD	118.598	7.167	8.8
Seward	1,891	CNA	Yes	Yes	ISD	120.889	7.839	
Sitka	3,237	THCC	Yes		ISD	133.703	15.769	
Skagway	659	THCC	Yes		ISD	134.469	14.033	
Sleetmute	122	AVCP			SOS	114.054	3.712	
Soldotna	1,652	CINA		Yes	ISD	117.766	6.974	
Stony River	75	AVCP			SOS	114.613	3.933	0.3
Talkeetna	182	CINA		Yes	ISD	120.807	6.405	
Tanacross	102	TCC	Yes	Yes	SOS	127.563	8.397	
Tanana	349	TCC	Yes		SOS	119.593	4.194	
Tatitlek	96	CNA			SOS	123.712	8.595	
Tenakee Springs	109	THCC			SOS	134.060	15.291	
Tetlin	122	TCC			BIA	128.320	8.858	
Tok	214	TCC		Yes	SOS	127.912	8.563	
Tyonek	232	CINA			ISD	119.535	6.617	
Valdez	1,052	CNA	Yes	Yes	ISD	129.177	8.632	
Wrangell	2,029	THCC	Yes		ISD	136.529	17.401	
Yakutat	230	THCC			ISD	130.100	12.255	

*Native Associations

AVCP – Association of Village Council Presidents
TCC – Tanana Chief's Conference
CINA – Cook Inlet, Native Association
CNA – Chugach Native Association
THCC – Thlinget Haida Central Council
CRNC – Copper River Native Council

**Educational Authorities

ISD – Independent School District
SOS – Alaska State - Operated School System
BIA – Bureau of Indian Affairs

***Satellite at 94° W longitude, 0° inclination

This preliminary plan, submitted by the Alaska Educational Broadcasting Commission (AEBC) to the National Center for Educational Technology (NCET) in 1972, stated that "approximately 35 Alaska communities will be identified during the first few months of 1973 as sites at which earth stations and associated equipment will be placed to receive television and use voice circuits."

Federal reaction to this first proposal, with a budget of over $4 million, required a scaling down of both project budget and the number of potential earth stations.

In February of 1973, the HET Policy Committee, on the recommendation of the Technical Subcommittee, asked all experiment participators to determine the fewest number of terminal sites that would result in an effective experiment (Appendix B.1).

On February 10, a list of possible sites in order of priority was submitted by an AEBC consultant to the U.S. Department of Health, Education and Welfare (HEW) (Table 6). This submission indicated that the minimum number of sites Alaska would require was 12 with a total of 17 sites "greatly adding to the significance of the project, and any number beyond that adding more" (Appendix B.2).

This established the Alaska Educational (ALED) experiment priority for 17 sites, with video transmit desired for Anchorage, Juneau and Fairbanks, and voice transmit asked for all sites.

Site selection was also coordinated with the Indian Health Service (IHS), the medical participants of the Alaska ATS-6 experiment. In the spring of 1973, IHS indicated to NASA and HEW its selection of Galena, Tanana, Fort Yukon and Fairbanks as video transmit sites.

Galena and Fairbanks were already included as ALED sites. Tanana (originally

TABLE 6. REVISED SITE LIST February 9, 1973

1. Fairbanks	Alaska Operations Center-video uplink essenti
2. Anchorage	Video uplink desired
3. Juneau	Video uplink desired
4. Angoon	
*5. Petersburg/Wrangell	56°44'N 132°57'W/56°28'N 132°23'W
6. Yakutat	
7. Craig	
8. McGrath	
9. Nikolai	
*10. Valdez	61°07'N 146°16'W
11. Nenana	
12. Minto	
13. Sleetmute	
14. Aniak	
**15. Russian Mission	61°34'N 158°15'W
16. Galena	
17. Allakaket	
18. Kake	
19. Hydaburg	
20. Ruby	
21. Klawock	
22. Tanana	
*23. Skagway	59°28'N 135°19'W
24. Tatitlek	
25. Crooked Creek	
26. Hughes	
27. Rampart	
28. Tanacross	
29. Tyonek	
30. Klukwan	

* Not included in original NASA clearance
** Incorrect Russian Mission originally listed

ALED's 22nd priority site) and Fort Yukon were added to the HET experiment site list in the spring of 1973 by HEW, bringing the list of Alaskan sites to 19. Tanana was well within the ALED ATS-6 footprint, and was added as an ALED participant. Alaska's selection of Chuathbaluk and Aniak as ALED participants made ALED program reception at Fort Yukon impossible due to the footprint configuration, so Fort Yukon remained a participant in the medical experiment only. To facilitate installation of all Alaskan ATS-6 terminals under one contractor to HEW, Fort Yukon was added to the ALED site list for installation purposes only.

Due to interference problems in the use of the 2250 MHz frequency encountered in late 1972 and early 1973 between NASA and the U.S. Department of Defense, only a limited number of transmit terminals were possible in Alaska (Appendix B.1). ALED required transmit capabilities at Juneau and Fairbanks, with IHS requesting transmit capability at Fairbanks, Tanana, Fort Yukon and Galena. These five sites were the only authorized transmission terminals in Alaska, due to the frequency problems. All Alaska sites were authorized for VHF radio transmit capability via the ATS-1 satellite, as a substitute for audio interaction using ATS-6, as originally planned.

(Due to these discovered frequency problems, Alaska was the only HEW/ATS-6 experiment location where the S-band or 2250 MHz frequency could be used. Thus, Alaska was the only ATS-6 experimenter to fully utilize all capabilities.)

Table 7 gives all selected Alaska ATS-6 HET terminal sites, capabilities and site populations.

TABLE 7.
ALASKA ATS-6 EARTH TERMINALS

	Population
COMPREHENSIVE	
Fairbanks (primary transmission location)	50,312
Juneau (back-up transmission location)	17,356
Tanana	406
Galena	442
Fort Yukon (medical only)	637
INTENSIVE	
Anchorage (metropolitan area)	154,434
Petersburg	2,386
Valdez	2,271
Angoon	400
Nenana	469
McGrath	279
Craig	467
Aniak	273
Yakutat	227
Allakaket	145
Minto	168
Nikolai	82
Sleetmute	109
Chuathbaluk	125

V. INSTALLATION

V. INSTALLATION

The ATS-6 Health/Education Telecommunications Experiment required the installation of 19 earth terminals throughout the state. All installation and maintenance costs were funded by contract agreement between the GOT and the HEW (Appendix A.3). The terminal equipment was provided by HEW through a unified procurement program for all ATS-6 users. Installation and maintenance was accomplished or supervised by GOT.*

The installation and maintenance operation can be divided into six components: 1) site survey; 2) site preparation; 3) equipment delivery; 4) antenna and electronics installation; 5) system testing; and 6) maintenance.

SITE SURVEYS

Installation procedures began with initial site surveys conducted by the GOT's Technical Manager for all 19 terminal sites (Appendix C). These preliminary surveys consisted of a general description of each community, geographical characteristics affecting satellite reception, possible unobstructed satellite view antenna locations, and any special problems that might be encountered in equipment installation.

Beginning in July 1973, site surveys continued through the summer, with the final two completed in November 1973 (Table 8 gives site survey completion dates at all terminal locations).

---

* Fairbanks: All installation and maintenance performed by University of Alaska, Division of Media Services subcontract with GOT (Appendix A.4).

Yakutat and Valdez: Terminal installation accomplished by Wire Communications Inc., hired by GOT (Appendix A.8).

Valdez: Base installation performed by bid award to Glenn Mills Construction (Appendix A.7).

TABLE 8. SITE SURVEY COMPLETION MILESTONES

MILESTONES		1973												1974											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	ALLAKAKET								▲																
2	ANCHORAGE								▲																
3	ANGOON							▲									▲								
4	ANIAK							▲																	
5	CHUATHBALUK							▲																	
6	CRAIG											▲													
7	FAIRBANKS																▲								
8	FORT YUKON								▲																
9	GALENA								▲																
10	JUNEAU																▲								
11	MCGRATH							▲																	
12	MINTO							▲																	
13	NENANA							▲																	
14	NIKOLAI							▲																	
15	PETERSBURG											▲													
16	SLEETMUTE							▲																	
17	TANANA								▲																
18	VALDEZ									▲															
19	YAKUTAT									▲															
20																									

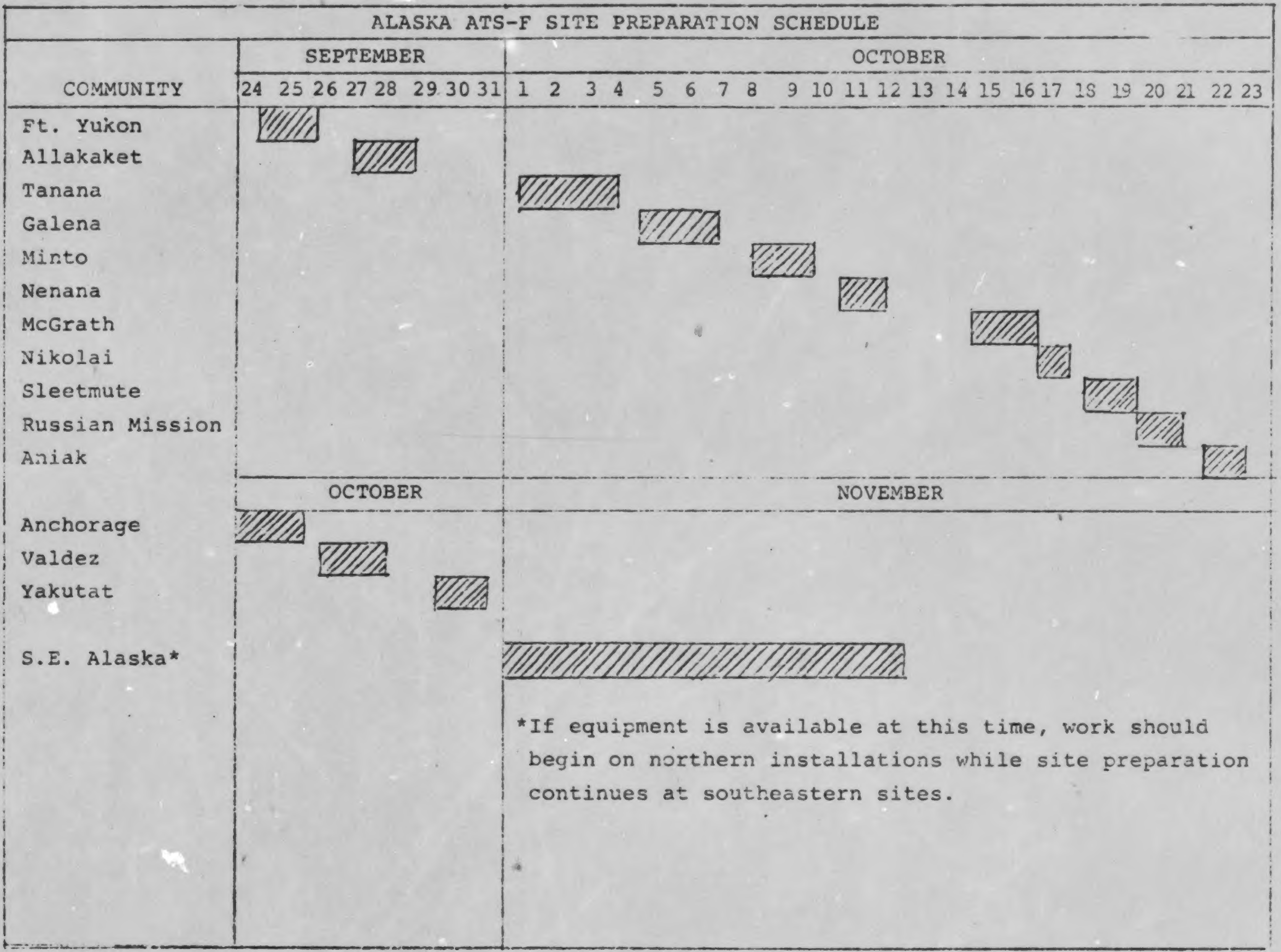
At all but one of the intensive sites, antenna and terminal electronic subsystems were planned for installation at the principal school in the community. The intensive terminal in Anchorage was installed at the Alaska Native Medical Center, to provide receive-only capabilities for medical experiment participation. Fort Yukon, involved exclusively in the medical experiments of ATS-6, required installation of its comprehensive terminal at the local medical clinic. Installation of the comprehensive terminals for Galena and Tanana was planned for the local clinics, with connecting cable to be run to the local school at Tanana, with a separate intensive terminal at the Galena school to provide reception-only of the ALED experiment programming. In Juneau, the comprehensive terminal was planned by GOT to be located on the roof of its office building. Fairbanks required two separate terminal installations, the main comprehensive terminal to be located at the University of Alaska, and a second intensive terminal at the Indian Health Service clinic.

SITE PREPARATION

Site preparation was originally planned to be completed prior to the winter months of 1973 (Table 9-A), to allow rapid installation once equipment began to arrive in Alaska. Delivery was then anticipated to begin in the fall of 1973. Site preparation was delayed, however, by winter weather and a variety of other complications.

The basic element of site preparation was construction of antenna base mounts (Figures 12-15), which began in October and November of 1973 and was completed during this time in Allakaket, Fort Yukon, Nikolai, Sleetmute and Yakutat. Site preparation in Chuathbaluk was not possible as planned in late 1973 because the Kuskokwim River iced up--boats could not operate and the ice was not solid enough

TABLE 9-A.



*If equipment is available at this time, work should begin on northern installations while site preparation continues at southeastern sites.

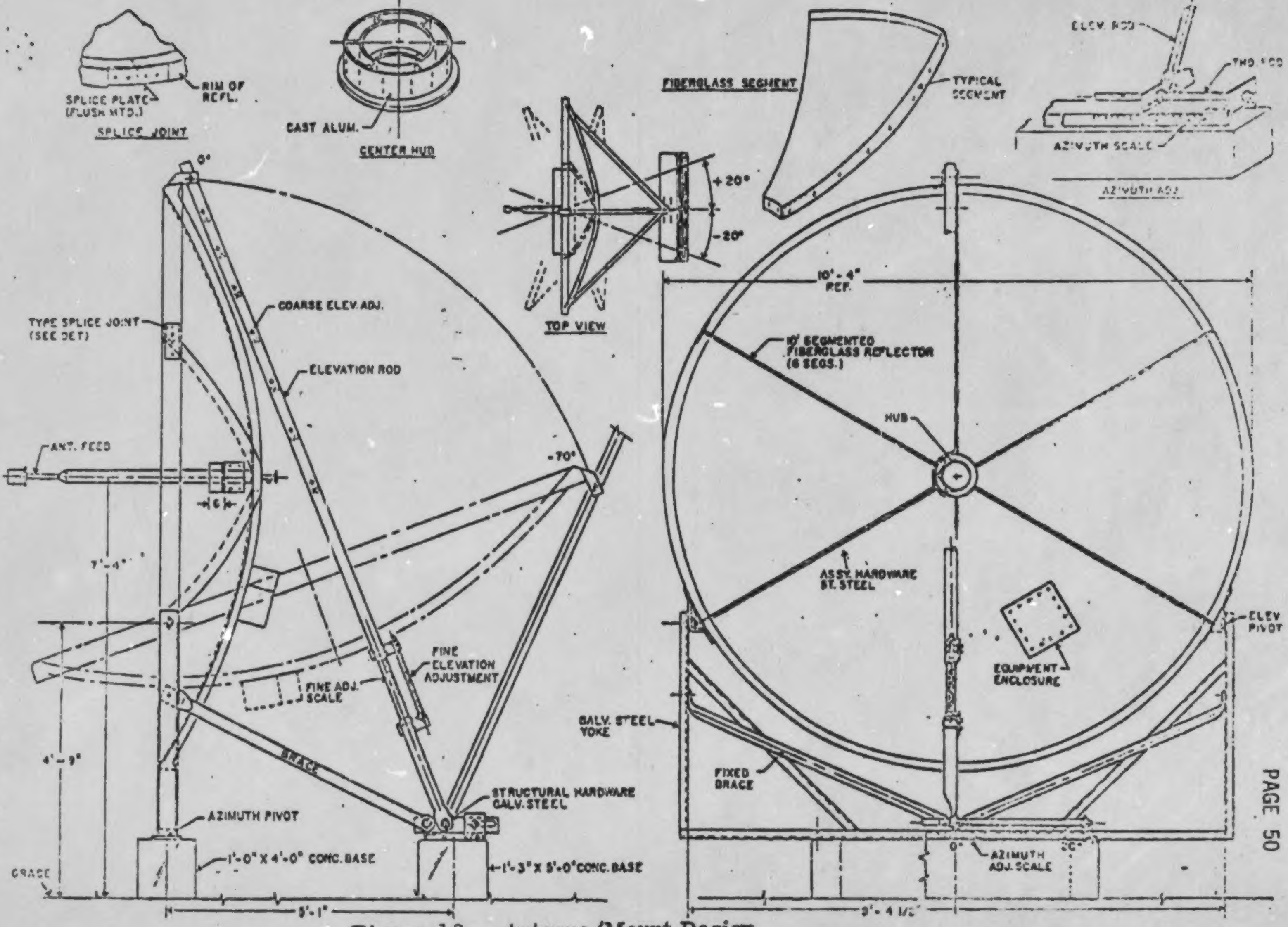

SPLICE PLATE (FLUSH MTD.)
RIM OF REFL.
SPLICE JOINT
CAST ALUM.
CENTER HUB
TOP VIEW
+20°
-20°
FIBERGLASS SEGMENT
TYPICAL SEGMENT
ELEV. ROD
THD. ROD
AZIMUTH SCALE
AZIMUTH ADJ.
0°
TYPE SPLICE JOINT (SEE DET)
COARSE ELEV. ADJ.
ELEVATION ROD
ANT. FEED
-70°
6
7'-4"
4'-9"
FINE ADJ. SCALE
FINE ELEVATION ADJUSTMENT
BRACE
STRUCTURAL HARDWARE GALV. STEEL
AZIMUTH PIVOT
1'-0" X 4'-0" CONC. BASE
1'-3" X 5'-0" CONC. BASE
GRADE
5'-1"
10'-4" REF.
10' SEGMENTED FIBERGLASS REFLECTOR (6 SEGS.)
HUB
ASSY. HARDWARE ST. STEEL
ELEV PIVOT
EQUIPMENT ENCLOSURE
GALV. STEEL YOKE
FIXED BRACE
0°
AZIMUTH ADJ. SCALE
30°
9'-4 1/2"

Figure 12. Antenna/Mount Design

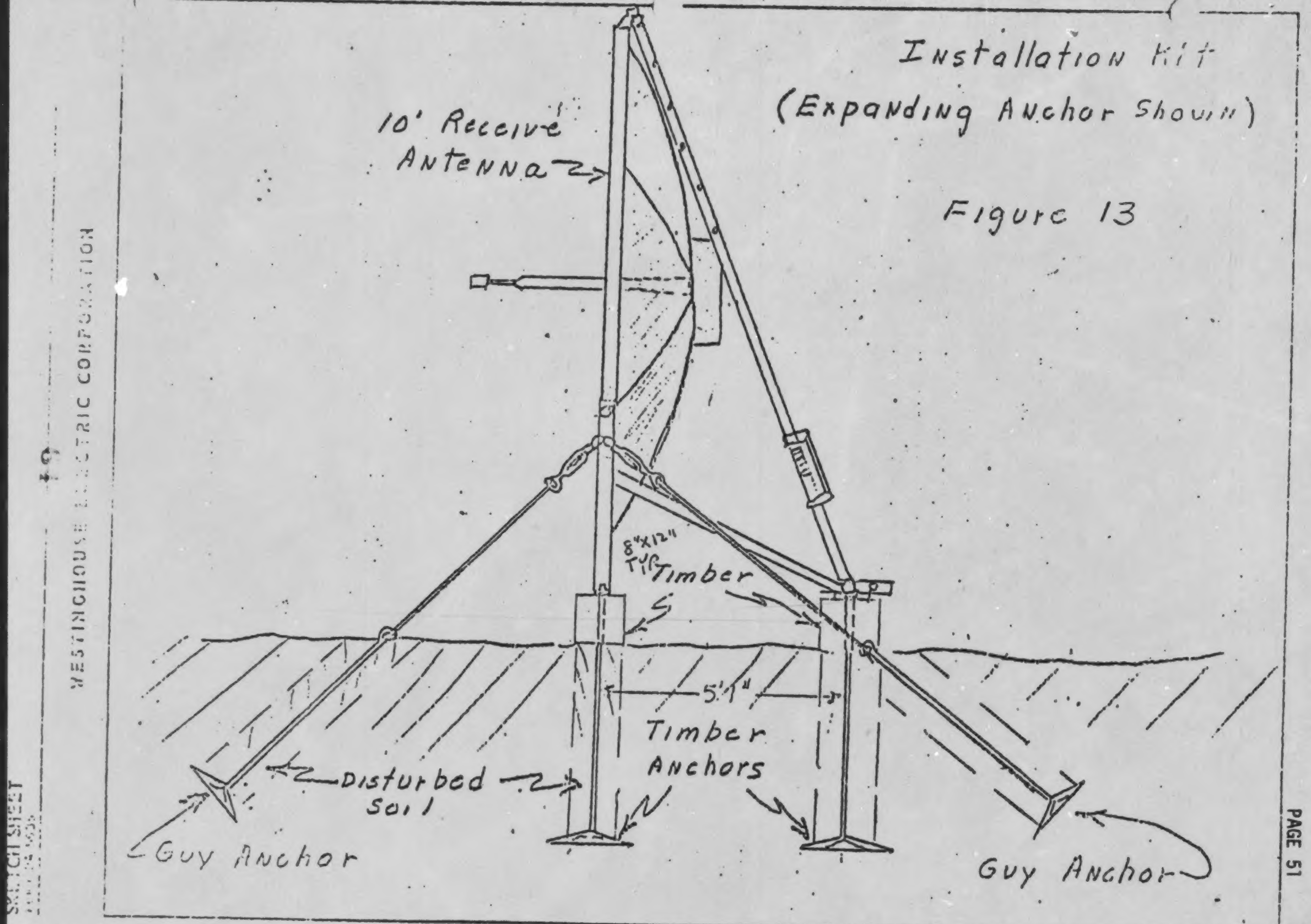

Installation Kit
(Expanding Anchor Shown)
Figure 13
10' Receive Antenna
8"x12" Typ Timber
5'1"
Timber Anchors
Disturbed Soil
Guy Anchor
Guy Anchor
WESTINGHOUSE ELECTRIC CORPORATION
SKETCH SHEET

FIGURE 13. ANTENNA ANCHORS

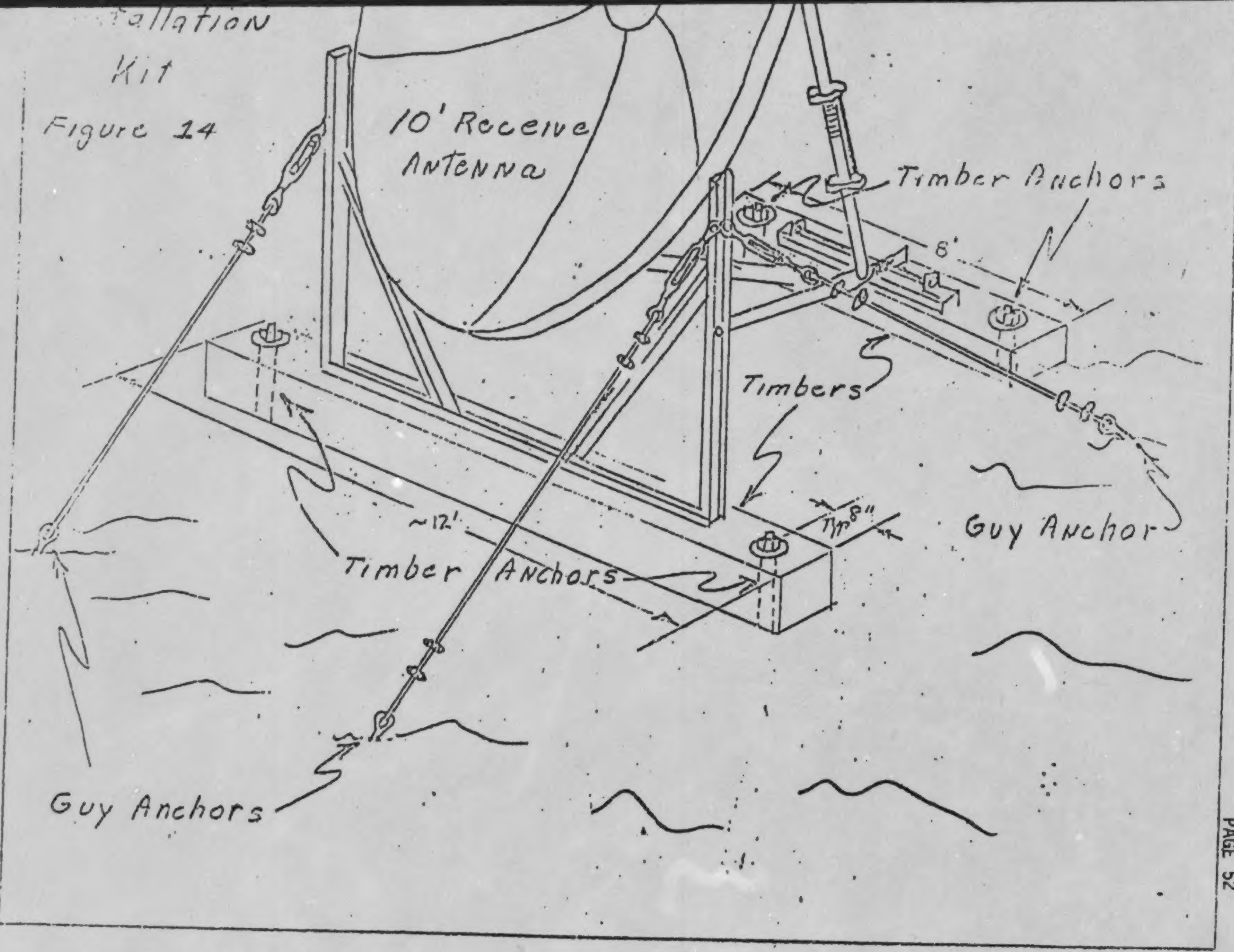
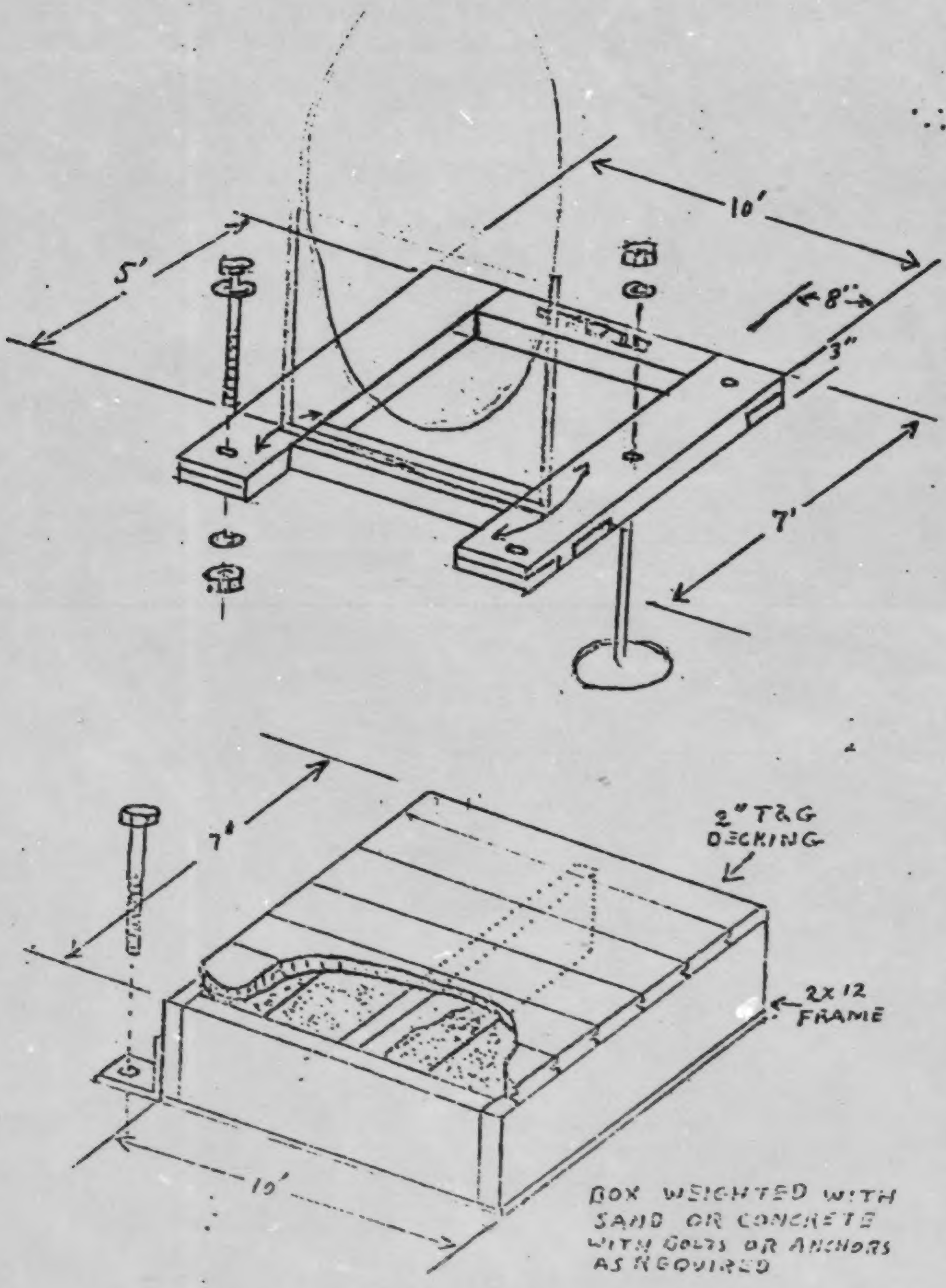

tallation
Kit
Figure 14
10' Receive
Antenna
Timber Anchors
8'
Timbers
Timbers
~12'
7"
8"
Guy Anchor
Timber Anchors
Guy Anchors

FIGURE 14. ANTENNA TIMBER ANCHORS


10'
5'
8"
3"
7'
7'
2" T&G DECKING
2x12 FRAME
10'

BOX WEIGHTED WITH SAND OR CONCRETE WITH BOLTS OR ANCHORS AS REQUIRED

POSSIBLE ALTERNATE ANTENNA BASES

FIGURE 15.

for planes to land. Attempts during this time period to construct base supports at Aniak and McGrath were delayed by the necessity of obtaining permission of the Alaska State Operated School System (ASOSS) for mounting the antennas on school roofs. Site preparation was delayed in Galena by plans to move the public health clinic. An attempt in November to construct a ground mount base in Petersburg was unsuccessful because of frozen ground and rock on the antenna site. All site preparation not completed in the fall of 1973 was accomplished at the time of actual antenna installation.

All site preparation was performed by the GOT Technical Manager and the Installation and Maintenance Supervisor, with various types of assistance. In Allakaket, Sleetmute and Petersburg local volunteers were sought to assist. For the roof mounts necessary on ASOSS schools at Aniak and McGrath, GOT personnel were assisted by the ASOSS Maintenance Department. In Craig, State Division of Buildings personnel assisted the GOT technicians, to assure that mounts were compatible with the structure of the school gym roof. In September, 1974, the GOT contracted with Mills Construction Company for base installation in Valdez.

At all other sites, assistance was provided by one or two temporary employees hired in Juneau who traveled to the sites with the GOT installation personnel.

Standard ground antenna base mounting was possible at eight of the sites: Allakaket, Fort Yukon, Minto, Nenana, Nikolai, Sleetmute, Tanana and Yakutat. Six required antenna roof mounting: Fairbanks, Craig, Aniak, McGrath, Anchorage and Juneau. Raised platforms for antenna mounting were needed in Angoon due to ground conditions, and in Valdez due to excessive winter snowfall. Ground conditions also required construction of antenna support boxes with gravel or dirt fill in Petersburg, Galena and Chuathbaluk.

The milestones of site preparation are shown in Table 9-B.

EQUIPMENT DELIVERY

Table 10 summarizes the equipment needed at all earth terminal sites, and equipment distribution depots (Fairbanks, Juneau or Anchorage). Shipment of all equipment supplied by HEW was made directly from the manufacturer to one of three Alaskan depots, depending on the location of the destination site.

Equipment requirements and suppliers for the Alaska HET experiment are listed in Table 11.

Firm, advance scheduling of equipment delivery was difficult. With supplier delays, HEW prioritized distribution of equipment delivery requirements based on installation completion requirements, which varied for ATS-6 participating experimenters.

In the initial planning process for the HET experiment, terminal installation was scheduled to be completed by the anticipated ATS-6 satellite launch date of April, 1974 (HET Program Plans, September and December, 1972). As planning continued, installation was seen possible as early as September, 1973 (ATS-F Program Plan Revisions, February, 1973).

The final Program Plan by GOT (March 1974) called for a schedule of hardware delivery beginning December 1973 through June, 1974, with installation beginning April, 1974, to be completed in July, 1974.

It was felt that this more realistic scheduling of installation activities would still allow adequate time for system testing prior to satellite broadcast transmission

TABLE 9-B. SITE PREPARATION COMPLETION MILESTONES

MILESTONES		1973												1974											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	ALLAKAKET										▲														
2	ANCHORAGE																		▲						
3	ANGOON																	▲							
4	ANIAK										△								▲						
5	CHUATHBALUK (RUSSIAN MISSION)																				▲				
6	CRAIG																▲								
7	FAIRBANKS																▲								
8	FORT YUKON										▲														
9	GALENA																				▲				
10	JUNEAU																		▲						
11	MCGRATH																		▲						
12	MINTO																				▲				
13	NENANA																				▲				
14	NIKOLAI										▲														
15	PETERSBURG											△				▲									
16	SLEETMUTE										▲														
17	TANANA																				▲				
18	VALDEZ																					▲			
19	YAKUTAT											▲													

TABLE 10. EARTH TERMINAL SITE SUMMARY

	EQUIPMENT REQUIRED			ATS-6 EXPERIMENTS		
VILLAGE	S-BAND RX ONLY	S-BAND TX ONLY	VHF TX/RX	MEDICAL	EDUCATIONAL	EQUIPMENT DEPOT
ALLAKAKET	X		*		X	F
ANGOON	X		X		X	J
ANCHORAGE	X		*	X		A
ANIAK	X		X		X	A
CHUATHBALUK	X		X		X	A
CRAIG	X		X		X	J
FAIRBANKS	X	X	*	X	X	F
FT. YUKON	X	X	*	X		F
GALENA	X	X	*	X	X	F
JUNEAU	X	X			X	J
McGRATH	X		X		X	A
MINTO	X		X		X	F
NENANA	X		X		X	F
NIKOLAI	X		X		X	A
PETERSBURG	X		X		X	J
SLEETMUTE	X		X		X	A
TANANA	X	X	*	X	X	F
VALDEZ	X		X		X	A
YAKUTAT	X		X		X	J

* VHF equipment already in community
F-Fairbanks
J-Juneau
A-Anchorage

TABLE 11. ALASKA/HET EQUIPMENT REQUIREMENTS & SUPPLIERS

EQUIPMENT	PRIME CONTRACTOR	SUPPLIER
Video Transmit Systems	Hughes	
5 10-ft. S-Band parabolic antennas		Prodelin
5 Transmit Subsystems		
Transmitter/modulator (Outdoor unit)	Hughes	
Baseband signal processor (Indoor unit)	Hughes	
Video Receive Systems	Westinghouse	
19 10-ft. S-Band parabolic antennas		Prodelin
19 Motorized antenna elevation drives		Prodelin
19 S-Band Receiver subsystems Microwave amplifier (Outdoor unit) Receiver/demodulator (Indoor unit)		Hewlett-Packard
35 25" TV Monitors		Yukon Radio (20) Northern Video (35)
VHF Systems	G.E.	Federation of Rocky Mountain States
19 VHF transceivers		
19 VHF helical antennas		

(then scheduled for September, 1974 - April, 1975).

Planned equipment installation dates as revised during the course of the project are given in Table 12, compared with actual equipment delivery and installation accomplishment dates.

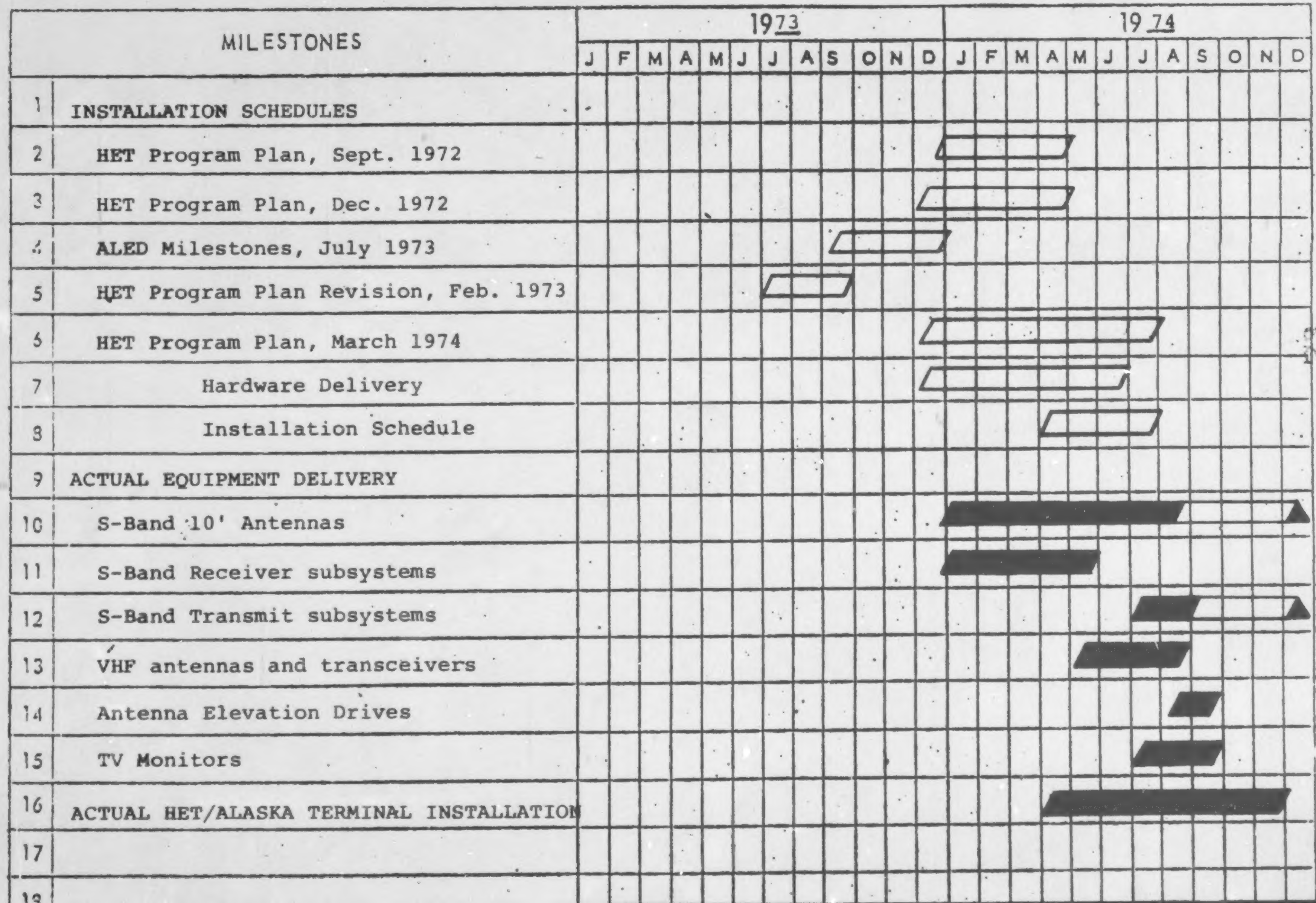
At a September 18, 1973 operations meeting in Juneau, HEW indicated that GOT could expect seven receive-only units shipped to Alaska for installation before the end of November. In September, Westinghouse had also informed GOT that the first antennas would be shipped on November 1, and electronics for receivers would be shipped beginning November 15. By mid-December, when no equipment had been received, the GOT Satellite Experiment Coordinator wrote HEW Director of Telecommunications Policy expressing concern that equipment delivery delays would adversely affect both project performance and budget, and requesting a written delivery schedule (Appendix D.1).

Response from HEW (Appendix D.2) indicated the difficulty of supplying an advance written delivery schedule, but assured GOT that a preliminary shipment of antennas had been made in late December. HEW also indicated that delivery of transmit terminals could be expected prior to the end of June, 1974.

As of the end of December, 1973, installation was a full month behind schedule due to lack of equipment.

Equipment began to arrive in late December, 1973, and continued to arrive sporadically during the first few months of 1974 (Table 12). GOT attempted to proceed with installation as equipment was delivered.

TABLE 12. ALASKA/HET EXPERIMENT INSTALLATION SCHEDULES, EQUIPMENT DELIVERY MILESTONES AND INSTALLATION ACCOMPLISHMENT SUMMARY



INSTALLATION

Earth Terminals

Installation began in April, 1974. All sites were contacted in April, requesting diagrams and descriptions of desired location of monitors in local schools.

Seven antennas still had not been delivered in late April. By May 15, only six complete antenna receive subsystems had been delivered; four to Fairbanks and two to Juneau. The two complete sets delivered to Juneau were installed in Petersburg and Craig, and one reflector (to complete a third subsystem) was shipped from Fairbanks for installation at Angoon. The three complete antennas remaining in Fairbanks were installed at the University of Alaska, Fairbanks (one transmit, one receive) and at the Native Health Service Hospital, Fairbanks.

The lack of complete systems ready for installation caused some serious planning problems for GOT technical staff. With limited installation funds, travel and personnel costs increased if incomplete systems were installed, and a return installation trip became necessary to a site. But waiting for complete system delivery reduced the time available for installation prior to satellite broadcast.

Site installation was accomplished by the GOT Technical Manager, and/or the Installation and Maintenance Supervisor, with occasional temporary employee assistance. Exceptions were Yakutat and Valdez, where installation was accomplished by Wire Communications, Inc. of Anchorage, under GOT subcontract (Appendix A.8). All installation in Fairbanks was performed by the University of Alaska, Division of Media Services.

Table 13 shows dates of antenna, subsystems, and VHF system installation.

TABLE 16. TERMINAL INSTALLATION COMPLETION MILESTONES

	MILESTONES	1974												19__											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	ALLAKAKET							▲																	
2	ANCHORAGE						▲																		
3	ANGOON				◭					◮															
4	ANIAK						◭		◮																
5	CHUATHBALUK								▲																
6	CRAIG									▲															
7	FAIRBANKS University of Alaska IHS Clinic							▲	▲																
8	FORT YUKON							▲																	
9	GALENA								◭	---	---	---	◮												
10	JUNEAU							◭	◮																
11	MCGRATH						◭				◮														
12	MINTO								▲																
13	NENANA								▲																
14	NIKOLAI								▲																
15	PETERSBURG				◭				◮																
16	SLEETMUTE							▲																	
17	TANANA								◭	◮															
18	VALDEZ									◭	◮														

◭ S-band antenna & subsystems

◮ VHF systems

--- Cable from clinic to school

One major effect of slow equipment delivery can be seen in the delay between initial installation and full operation. S-band antennas and subsystems were installed in a number of sites between April and June, 1974. But these sites could not become fully operational until the arrival and installation of the VHF systems in August and September. This caused return installation trips to be necessary to almost half of the terminal sites, increasing installation costs.

VHF terminals and S-band transmitters and antennas had not been received by the end of June (Appendix D.3). A partial shipment of VHF terminals was indicated for the end of July. S-band antennas were still not available for Yakutat, Minto, Nenana and Galena. Transportation problems also delayed delivery of equipment to Chuathbaluk, Sleetmute and Nikolai. With this combination of delays, by July installation was more than two months behind schedule.

Installation continued as equipment was delivered in August and September. By September 30, 1974, all terminals had been installed with the exceptions of Galena, Valdez and Craig.

Installation had been completed in Craig in September, but the S-band signal could not be received. With return of the receiver to the manufacturer for repair, the Craig terminal was left incomplete. All equipment had been installed in Valdez in September, except for the S-band receiver, which had not yet been delivered. The comprehensive terminal at Galena was also awaiting an S-band receiver.

In October the Valdez terminal was completed with the installation of an S-band receiver transferred from Fairbanks. The Galena terminal was completed in early December. An operating receiver was still unavailable, so cable was run from the

ATS-6 health experiment terminal in the health clinic to the school, to provide ALED reception.

Table 14 details the costs incurred in the intensive terminal installation in Allakaket, where site survey, preparation, installation and testing encountered no unusual problems. The total cost of Allakaket terminal installation was $3,649.68.

The terminal installation in Valdez was more costly, due to the necessity of sub-contracting both S-band antenna mounting base construction and antenna installation. The installation costs for the Valdez terminal totaled $7,324.79 (Table 15).

Installation costs for all the earth terminal sites averaged $5,500.

Juneau Studio

In addition to the standard comprehensive terminal facilities for transmitting and receiving satellite broadcasts, Juneau also had a medium-priced, color video studio production facility.

The Juneau facilities were planned to provide the ALED experiment with a back-up transmitting studio in case of technical transmission problems in Fairbanks, the main transmitting studio. Based on this plan for a more inexpensive broadcast studio, in early 1974, the GOT Installation and Maintenance Supervisor prepared a cost estimate of the basic video and audio equipment necessary, as well as options for increased production capabilities. This basic package total estimate was $45,000. With the variety of options possible the cost estimate ranged from $60,000 to $79,000.

On April 9, 1974 an Invitation to Bid on specified Juneau studio equipment was issued by the State of Alaska and sealed bids were received until May 2. Bids were then awarded by line item, based on the lowest price meeting specifications and

TABLE 14. ALLAKAKET TERMINAL INSTALLATION COSTS

DATE	ACTIVITY	COST	
1973	SITE SURVEY		
8/16	Transportation	$158.46	
	Transportation	156.50	
	Per diem (3x30)	90.00	
	McIntire time (72.90x3)	218.70	$623.66
1973	SITE PREPARATION/BASE INSTALLATION		
9/30-	Transportation	286.45	
10/5	Per diem	99.25	
	Shaginaw time (54.30x3)	162.90	548.60
1974	ANTENNA INSTALLATION		
7/15-	Transportation (2)	176.54	
19		429.20	
		91.28	
		157.08	
	Per diem	169.50	
		121.50	
	Shaginaw time (91.58x4)	366.32	
	Martin time (6.65x50)	332.50	1843.92
1974	POINTING TEST		
10/5	Transportation	244.00	
	Per diem	9.50	
	Espe time (1 day)	80.00	333.50
	FREIGHT (estimate)		300.00
	TOTAL		$3649.68

TABLE 15. VALDEZ TERMINAL INSTALLATION COSTS

DATE	ACTIVITY	COST	
1973	SITE SURVEY		
9/18-20	Transportation	$160.28	
	Per diem	70.30	
	McIntire time (72.90x3)	218.70	449.28
1974	SITE PREPARATION/BASE INSTALLATION		
Sept.	Glenn Mills Construction		2100.00
1974	ANTENNA INSTALLATION		
Sept.	Wire Communications, Inc.		2924.24
1974	POINTING TEST		
9/9-11	Transportation	262.28	
	Per diem	93.80	
	McIntire time	223.70	579.78
1974	ADDITIONAL WORK		
10/15-18	Transportation	175.81	
	Per diem	178.43	
	Martell time (6.65x25)	166.25	520.49
1974	REPAIR WORK		
11/6-8	Transportation	171.50	
	Per diem	91.50	
	Dowling time (12x24)	288.00	551.00
	FREIGHT (estimate)		200.00
	TOTAL		$7324.79

soonest delivery date.

Table 16 details equipment suppliers, cost, delivery date required, and actual complete order delivery date. The total cost of the Juneau basic studio facility equipment was $68,260.

As equipment began to arrive in June, studio installation began. Non-arrival of some equipment (such as equipment racks) necessitated some improvisation, but the basic Juneau studio unit was installed and minimally operational in July, 1974.

In September some additional cost was incurred in Juneau set construction, with purchase of supplies (Appendix D.4). All Juneau studio installation and set construction was performed by GOT personnel.

SYSTEM TESTING

Antenna alignment and subsystem testing occurred at most terminal sites as installation was completed (Table 17).

The technical testing and data gathering essential to the Alaska HET experiment was submitted to NASA in March, 1974, by the GOT Technical Manager (Appendix E). This plan consisted mainly of a weekly log to be maintained at each terminal site detailing video and audio quality, and submitted to GOT.

In April, 1974, a bid waiver was received by GOT from the State of Alaska for purchase of test equipment needed immediately in the Juneau studio (Appendix E.1 and E.1.1). The equipment was purchased in April, for a total of $4,675 (Appendix E.1.2 and E.1.3).

Anticipating equipment delivery prior to July 1, the GOT had originally planned to begin system tests in August. Late deliveries and installation delayed this initial schedule.

TABLE 16. JUNEAU STUDIO EQUIPMENT PROCUREMENT

SUPPLIER	ORDER DATE	COST	DELIVERY DATE REQUIRED	ORDER COMPLETE
Northern Video Systems	5/14/74	$30,820.41	6/17/74 or sooner	12/13/74
Northern Video Systems	5/28/74	21,569.79	7/1/74 or sooner	7/27/74
Bennett Engineering	5/16/74	10,590.00	6/17/74 or sooner	6/17/74*
Bennett Engineering	6/12/74	3,135.00	7/30/74	8/15/74
American Data Corporation	5/16/74	2,145.00	6/5/74 or sooner	6/24/74
	TOTAL	$68,260.00		

* order not fully complete until 12/11/74, due to factory delay.

TABLE 17. TERMINAL SITE POINTING AND TESTING/OPERATIONAL TERMINAL COMPLETION MILESTONES

	MILESTONES	1974												1975											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	ALLAKAKET							△			▲														
2	ANCHORAGE						▲																		
3	ANGOON							▲																	
4	ANIAK								△	△	▲														
5	CHUATHBALUK (RUSSIAN MISSION)									△	▲														
6	CRAIG									△	△					▲									
7	FAIRBANKS University of Alaska							▲																	
	IHS Clinic								▲																
8	FORT YUKON							▲																	
9	GALENA								△		△		▲												
10	JUNEAU								▲																
11	MCGRATH									▲															
12	MINTO									▲															
13	NENANA								▲																
14	NIKOLAI								▲																
15	PETERSBURG								▲																
16	SLEETMUTE							▲																	
17	TANANA								△	▲															
18	VALDEZ									▲															
19	YAKUTAT									▲															

Testing the total HET experiment system for antenna alignment and electronics checkout began early in September.

In September it became quickly apparent that when both S-band downlinks HET 1 (2569.2 GHz) and HET 2 (2670 GHz) were used simultaneously, serious degradation of the HET 1 signal resulted.

Fairbanks attempted to broadcast its first program on September 17. Baseband signals were excellent, but were not hitting the satellite at a decent dBm level, so consequently the signal wasn't reaching anyone. Juneau attempted radiating a signal, with similar results, and the conclusion was reached that the satellite had not been configured correctly for the ALED mode.

Fairbanks began testing on September 18 to determine if this was true. Both Fairbanks and Juneau transmitted, with Tanana, Fairbanks and Juneau monitoring the returning signals on both 2569 and 2670. It appeared that HET 1 was not working correctly and was affecting HET 2 or the S-band receiver.

On September 20, a special test was conducted with Juneau, Fairbanks and ATSOCC to check performance with all practical configurations of the satellite, i.e. C-band to HET's 1 and 2 singly and simultaneously; S-band to both HET's singly and simultaneously, with these tests repeated for beams S-1 and S-2. These tests confirmed earlier observations that when both HET's were in use, HET 1 was unsatisfactory, and even when used singly, HET 2 (2670 GHz) yielded superior performance.

Based on these tests, the GOT requested of NASA that the Alaska Education experiment be allowed to use 2670 GHz. Permission was granted so the S-band receivers already installed were changed from 2569.2 GHz to 2670 GHz. At most of the sites it was possible to instruct the local utilization aides to make the change. However, due to communications problems it was necessary for a GOT technician to travel to Mc Grath and Nikolai to make the changes.

An unforeseen problem became apparent in October, after the start of regular programming. During program transmission on October 14 (1900 to 2025 Zulu) the ATS-1 VHF channel 4 was completely unuseable for interaction due to interference from Appalachian Regional Commission (ARC) stations using ATS-3 channel 4. Call signs and messages between ARC 90, 91, 92 and 94 were read clearly. The ARC stations occasionally came in with sufficient strength to completely override Alaska stations. Even when the outside stations could not be read, Alaska experienced squelch breaks which, when adjusted out, raised the squelch threshold to the point that the weaker stations in the Alaska network could not be heard. Interference from ARC stations was the most severe, although Federation of Rocky Mountain States (FORMS) stations were also occasionally heard.

At the same time, Alaskan stations which were utilizing previously installed channel 3 transceivers continued to operate satisfactorily, without interference. GOT requested of NASA in October that crystals be provided to convert all Alaskan VHF units to channel 3. The crystals were provided by FORMS, and installation proceeded (Appendix E.2).

Changing frequencies of the digital coordinators and installing the crystals required GOT maintenance personnel to travel to 12 sites. The changeover to channel 3 was accomplished on all sites by November 19, with the exception of Chuathbaluk, which was accomplished in early December by a resident teacher with procedures provided by GOT. In addition to reducing interference problems, having all stations on channel 3 simplified system operation by eliminating channel switching that had been necessary in Juneau to contact all Alaska terminals.

Aniak, Allakaket, and Fairbanks were chosen jointly by NASA and GOT as the "truth" sites in Alaska for testing signal strength and quality. Aniak, on the southwest edge of the footprint, and Allakaket on the northwest edge, were the outermost terminals of the Alaska ATS-6 ALED experiment footprint, providing data on accurate satellite pointing. Aniak continued to experience low S-band signal reception. Pointing adjustment resulted in approximately equal and acceptable levels at both Aniak and Allakaket. After adjusted pointing, signal levels at Fairbanks decreased slightly but remained acceptable.

A special pointing was conducted on October 3, 1974 to determine the best possible configuration for standard ATS-6 pointing for the ALED experiment. Through these tests a standard pointing to include all ALED sites was determined. Alignments at Aniak and Allakaket resulted in acceptable S-band reception.

During ALED program broadcast on November 1 (2030 to 2125 Zulu), GOT/Juneau experienced an abrupt deterioration of signal quality which lasted for approximately 20 minutes. The problem appeared prior to 2100 while Juneau was transmitting. The picture and audio became noisy and distorted as viewed in Juneau. Several remote sites reported that the picture and sound had deteriorated. GOT checked through NCC and found input to the satellite was -74 dBm, a figure consistent with good signal quality. At approximately 2100 Juneau stopped transmitting and Fairbanks began transmitting. At approximately 2115 the signal abruptly cleared up and remained normal for the remainder of the ALED broadcast time.

During this period of degraded signal there was nothing to indicate that either Juneau or Fairbanks were operating other than normally, and NASA could supply no explanation for the possible cause. The problem did not recur.

MAINTENANCE

Maintenance on all 18 terminal equipment was performed by GOT, under its contract with HEW (Appendix A.3). GOT subcontracted maintenance tasks in Fairbanks to KUAC-TV (Appendix A.4). (Upon installation, the comprehensive terminal at Fort Yukon was maintained by medical experiment personnel).

Maintenance was planned by GOT to be performed on an as-needed basis.

Table 18 indicates equipment failures at terminal sites and corrective action taken.

Original systems design called for installation of motorized antenna elevation units at all terminal sites. Pre-installation checks of the units installed in September at the comprehensive terminals in Juneau and Fairbanks showed that several sets of magnetic limit switches were defective. The units appeared to operate satisfactorily once installed, however, it was decided not to install units in the field until greater reliability could be assured.

The antenna drive elevation motors failed on both antennas in Fairbanks in October, and in Juneau in November. It appeared that the motors did not have the power to overcome the drag caused by gear mis-alignment and increased lubricant stiffness in cold weather. The failure in Juneau was caused by both limit switches pulling in when the high limit magnet came into proximity with them, causing an electrical lock-up condition preventing further adjustment.

TABLE 18. ALASKA/HET TERMINAL FAILURE LOG

Date	Site	Trouble	Cause	Correction
October 1974	Juneau	No S-band receive	H.P. receiver failure	Replaced with spare, defective unit sent to H.P. for repair.
October	Fairbanks	No S-band receive	Antenna drive failure due to mechanism binding	Replaced antenna drive motor.
November	Juneau	No S-band receive	Same cause	Operated antenna manually.
January 1975	Nikolai	No S-band receive	H.P. preamp failure	Replaced w/spare, sent defective unit to H.P. for repair.
January	Fairbanks	5 db reduction in transmit power output	Transmit antenna center pin broken	Pin replaced.
January	Valdez	Poor video receive	Antenna drive failure	Replaced antenna drive motor
January	Yakutat	No VHF	Antenna elevation off due to heavy snow load	Removed snow, re-pointed antenna
February	Fairbanks	No S-band transmit	Low temperature	Enclosed transmitter with additional insulation
February	McGrath	No S-band receive	H.P. receiver failure	Replaced w/ spare, sent defective unit to H.P. for repair
March	Galena	No VHF	Shorted school-clinic control pair; cracked insulation due to cold	Changed to spare pair
April	Galena	No VHF	Same as above	Ran new clinic-school audio control cable

Continued next page

TABLE 18. (Cont'd) ALASKA/HET TECHNICAL FAILURE LOG

Date	Site	Trouble	Cause	Correction
April	Nikolai	No VHF	Fuse F-3 on digital coordinator open; cause unknown	Replaced fuse, checked current: normal
April	Nikolai	VHF carrier: no modulation		Sent new transmitter unit for replacement
May	Nikolai	No VHF		Replaced transmit crystal and microphone

Two motor burnouts were experienced at Juneau prior to installation of the modification kits. Both were caused by jamming due to wear in the elevation mechanism. The first failure was in the bushing which the modification kit replaced. The second failure was due to wear of the female threads of the elevation screw mechanism. This failure would not have been prevented by installation of the modification kit.

The higher rate of failures at Juneau and Fairbanks was due probably to the fact that as primary terminals they were operated much more frequently than the receive-only terminals. The low look-angles in Alaska doubtlessly aggravated the weaknesses in the elevation mechanism. Low angles caused the elevation pole to become more horizontal, thereby increasing the bending forces on the rotating joints.

With receipt in Juneau in December of the manufacturer's modification kit for antenna elevation motor drive assemblies, modifications were installed in Fairbanks and Juneau and there were no further failures.

The units were also installed in Craig and Valdez in October, since the location of antennas at these sites was such that access to them for manual adjustment was difficult. The unit in Valdez failed in January causing a station failure, and the drive motor was replaced. The units at both Craig and Valdez were then modified to preclude any further failures.

Alaska's cold winter weather may have contributed to the antenna drive failures, as well as other problems. In January, 1975, Yakutat experienced a severe degradation of the ATS-1 VHF circuit, caused by a heavy load of wet snow on the helical antenna. The weight of the snow apparently was sufficient to overcome the friction of the elevation clamp allowing the antenna to swing down. The problem did not recur once the antenna was kept free of snow.

Another problem in Fairbanks in January, which may or may not have been caused by cold weather, was the breaking off of the center pin on one of the N type connectors at the transmit antenna. This resulted in a 5dB reduction of power output until the problem was located and corrected.

On February 11 in Fairbanks, the S-band transmitter could not be turned on, and Alaska Native Magazine could not be broadcast. The failure was apparently caused by low temperatures and high winds which cooled the transmitter to below its 30 degrees F. operating point. Weather conditions at the time consisted of -20 degrees F. temperatures and 20 knot winds, resulting in an equivalent chill temperature of around -70 degrees F. The problem was corrected the next day be placing an insulated box over the transmitter heat sink.

All other failures are listed in Table 18.

The technical problems that persisted in Craig are described in Appendix E.3.

Total equipment installation and maintenance costs are given in Appendix J.1.

VI. UTILIZATION

VI. UTILIZATION FIELD ACTIVITIES AND USER INVOLVEMENT

One basic and consistent planning concept of the ALED/ATS-6 experiment was effective utilization of the project by its rural Alaskan consumers. Program plans stressed good user liaison and involvement during all planning, operational and follow-through phases.

Three basic utilization components can be identified as actively involving field users in the ALED experiments:

1. Program Planning

   Consumer Committees, selected from footprint site residents to provide input and review during program planning and design.

2. Field Equipment Operation and Utilization

   Utilization Aides, field assistants responsible to GOT for operation of terminal equipment, local publicity, and data collection at each site.

3. Viewer Involvement

   Interaction, a component of all ALED programming allowing direct viewer response via ATS-1 VHF link.

CONSUMER COMMITTEES

In all phases of development planning for the ALED/ATS-6 experiment, GOT's concern for producing programming relevant to the rural Alaskan audience remained high. To accomplish this, GOT established consumer committees made up of ATS-6 footprint community residents to give specific input to program planning during all stages of design and to insure that the committees' chosen objectives and content were fully carried through in program production.

Instructional Programming

Community contact to create these committees began in December 1973, almost one year before ATS-6 ALED broadcasting began. The GOT Utilization Manager requested all participating villages to select one resident to represent each village on consumer committees for the three Instructional Programming series: Health Education, Basic Oral Language Development and Early Childhood Education (Appendix G). Similar requests were also made of the Alaska Division of Public Health, Alaska State Operated School System (ASOSS), Alaska Federation of Natives, and Thlinget and Haida Community Councils.

Response (verbal or written) was made to virtually every request for participation, with varied degrees of interest: "Best of luck on your venture," wrote the Mayor of Angoon, "We like the way you folks are starting." The City Manager of Galena, responding promptly to the request, stated, "Thank you for your interest in our community."

This established formal contact in late 1973 and early 1974 between GOT and village councils, local governments, school superintendents and regional Native corporations. Selection of committee representatives was left entirely in the hands of each community or organization. Generally, selection was made by the most active and interested local organization, which varied with each village.

In April 1974, it was brought to the attention of GOT personnel that there was some degree of dissatisfaction with the selection of the consumer committee member from Petersburg (Appendix G.1). While not a major problem, some school personnel were concerned that Petersburg was not represented by a teacher. While most contacts for committee representation had been made through local school superintendents, the only contact made in Petersburg by the GOT Utilization Manager had been the Thlinget and Haida Community Council, which had delegated its representative.

To clear up any misunderstandings, GOT personnel visited Petersburg and met with the school board to explain that while some communities had chosen committee representatives who were teachers, GOT was interested in laymen participating in program planning. Once this explanation had been made, no further dissatisfaction was expressed by Petersburg teachers (Appendix G.2).

While first village contacts were made in writing formally requesting consumer committee participation. many of the GOT Utilization Manager's site village contacts were by telephone or in person, and this was a continuing utilization practice throughout the project.

The way of life in rural Alaska is not a formal one. Letters from government agencies often go unanswered for a combination of reasons, but this in itself is not a sign of disinterest or lack of enthusiasm While this was often frustrating for formal record keeping and documentation, the Utilization Manager accepted that a formal written response was not often a practical expectation from rural Alaskan residents, particularly in the summer.

In January and February, the Utilization Manager made personal contact with those persons selected as representatives on the consumer committees, inviting them to the first meeting (Appendix G.3).

The first meeting was held in Juneau in February, with only Nenana and Galena not represented. The meeting was designed to acquaint members with the overall ALED/ATS-6 project, to develop a working relationship between the program design contractor, Northwest Regional Educational Laboratory (NWREL) and the committees, and establish the committees' goals for each of the Instructional programs to be designed.

The first action of the consumer committees was to approve the "Roles and Responsibilities of Consumer Committees" (Appendix G.4) which had been prepared by NWREL. All future actions by the committees followed these initial guidelines, from selection of basic priority areas for programming, through to final design approval and actual program production.

GOT's assessment of the consumer committee meeting was generally a positive one. Reported the Education Experiment Manager after the first meeting: "We were all impressed with the attitude of the committees as they began to meet in their separate groups. They were serious and worked quite hard. They seemed to feel that what they were doing was important and to enjoy the task proposed for them."

It was also noted by GOT that nine of the village representatives were non-Native. The decision of the predominantly Native receiving sites to send non-Natives was exclusively their decision. GOT did not feel that it should have insisted that sites send only Native representatives.

The committee meetings did indicate some areas for GOT's concern, as reported by the Utilization Manager. All of the representatives did not participate fully, which seemed to indicate the need for site visits by GOT personnel to further explain the ATS-6 project and increase village user interest.

A few consumer committee members were active, but skeptical. This under-current of feeling reappeared at various levels of village involvement in the ALED project, and was perhaps best summarized by one Native committee member during the first meeting: "Not until I see the implementation of the goals and objectives and am able to see the advice we give being properly carried out over the TV satellite screen will I believe we are a committee involved in a productive workshop committee."

This attitude, while not often stated as openly, was one element of rural reaction that GOT personnel felt to be a result of the numerous Federal and State agency short-term experiments conducted in Alaska's bush in the past. With the planning of each new government project or experiment, Alaska's rural Natives have developed a "wait and see" interest in the project's possibilities. Government planning takes time, and as projects near implementation, interest increases. Once a project is in operation, participation and interest by village residents heightens, if they feel the project to be relevant to them. When the project is completed and leaves the villages, residents are once again left to their own way of living, with or without impact from the project.

This experience has made some wary of government goals and promises. The best insurance against false expectations, in GOT's view, was to allow specific programming goals to come from the consumer committees themselves. GOT remained actively involved with keeping sites informed about the project, to increase positive village participation and involvement. This was accomplished both by word of mouth from consumer committee members, as well as by increased site visits by GOT personnel in early 1974 to explain the ATS-6 project and report on its progress.

As a result of the first consumer committee meeting a membership list for the three committees could be made (Appendix G.5).

With the goals of the Instructional Programming detailed by the consumer committees, NWREL proceded to develop program design, with continuing committee input and review. The committees met in February, April, June, September and November, 1974, reviewing the work of NWREL, recommending changes, suggesting alternatives and approving program design. The consumer committees' impact on Instructional Programming design is detailed and documented in the Program Design and Program Production/Instructional Programming sections of this report.

Viewer-Defined Programming

Viewer-Defined Programming, the Alaska Native Magazine (ANM) series, had its own consumer committee. In January 1974, the GOT Utilization Manager met with Alaska Federation of Natives (AFN) executives to discuss Alaska Native Magazine. It was their suggestion that representatives from the four regional corporations represented in the ATS-6 footprint sit on the content selection committee. This suggestion was carried out, and committee members were chosen at the request of GOT (Appendix G.6), by the Chugach and Cook Inlet Native Associations, Calista and Sealaska Corporations, Tanana Chiefs Conference, and the Alaska Federation of Natives. Members were selected by the regional Native corporations by mid-1974. (Membership list, Appendix G.7.)

While the production staff of ANM at KUAC-TV, Fairbanks, suggested possible programs to the consumer committee, final program topic selection was directly the responsibility of the committee.

Meetings were held in July, August, October, November, December, February and March. At the initial meeting, the consumer committee accepted the program title, and made the decision to broadcast the program in English, Yupik, Thlinget and Athabaskan. The format they chose was to have an on-camera host, combined with guests, on-location footage, rural Alaskan news and time for interaction with viewing villages. With selection at this first meeting of the topics for the first six programs in the series, it was then intended for the committee to coordinate and approve future topics suggested by the Native viewers. Since few topic suggestions were forthcoming from viewers, the committee then was responsible for selecting most of the subsequent program topics. Program production was then accomplished by KUAC-TV, Fairbanks, based on the decisions of the consumer committee.

Throughout the planning for ANM, the committee was concerned that the program be relevant and understandable to village residents, avoiding overly "slick" formats, and "bureaucratic" language.

After the first ANM consumer committee meeting, attendance began to drop. The GOT Utilization Manager contacted committee members (verbally) in late 1974 to encourage them to attend, or appoint alternates. Most committee members selected by the Native corporations spent much of their time traveling, and were not always available for meetings. The Calista Corporation representative resigned in October, and his replacement did not attend any subsequent ANM consumer committee meetings due to his busy schedule.

Another problem which became apparent to GOT personnel in late 1974 was that the ANM consumer committee was made up of Natives active and living in urban areas, with little opportunity to actually view ANM programs. This resulted in the need, at committee meetings, for reviews of programming already broadcast before continued planning was possible. In December, the Utilization Manager wrote to KUAC, expressing his observations that, due to the make-up of the consumer committee, more time was needed at meetings for comprehensive program planning (Appendix G.8). The GOT Utilization Manager, in his contacts with committee members, had learned that some were feeling "rushed" on their decisions, due to the deadlines necessary for ANM production. It was the Utilization Manager's understanding, from the feelings expressed to him by consumer committee members, that the committee needed more time to make its programming decisions. At the same time, the program producers needed committee decisions to be made to allow production to proceed on schedule.

This conflict between time demands and the Native approach to decision making was discussed at a meeting in January in Anchorage between GOT personnel and KUAC-TV staff. The informal decision reached was to allow ANM consumer committee more time for its decisions, and in the future to discuss any problems directly with KUAC-TV staff.

At the invitation of the GOT Utilization Manager and ANM committee members, village utilization aides were invited to the last ANM consumer committee meeting in March 1975. This resulted in direct viewer input and suggestions, which committee members welcomed.

Details of the ANM consumer committee's impact on ANM programming are given in the Program Design and Program Production/Viewer Defined Programming sections of this report.

UTILIZATION AIDES

Another step toward maximum field utilization included in GOT's planning for the ALED experiment was to have trained community aides at all terminal sites. This direct liaison between GOT and a resident of each site was designed specifically to provide a means of publicizing program scheduling, data gathering, and to insure that terminal equipment was operating adequately and would be handled properly and consistently by one village resident trained in its use.

GOT's March 1974 Program Plan called for the hiring of field utilization aides by May 1974. This was delayed, however, by the turnover in Utilization Managers within GOT. The first Utilization Manager resigned in mid-March 1974. His replacement was not hired until early May, then resigned one month later. The third Manager was hired in early July, and one of his first activities was development of a training plan for utilization aides (Appendix G.9). The July revised milestone schedule for utilization management called for the aides to be hired by the end of August.

Working from previous village contacts made by GOT personnel, the Utilization Manager formally contacted residents in each footprint village in July and August, requesting the names of reliable people interested in working as part-time utilization aides (Appendix G.10).

Response to these inquiries resulted in a list of residents interested in these positions. Personal verbal contact followed, with most aides being hired August 15. The aides for Minto and Allakaket were hired in early September, and the Galena aide was hired December 1 (when Galena became operational). Appendix G.11 lists all utilization aides by sites. (Aides were not hired for Fairbanks, Juneau and Anchorage.)

By contract agreement with GOT (Appendix A.10) each aide was paid $200/month. Duties were defined as: 1) operating satellite terminal equipment during transmissions;

2) distributing publicity regarding the project; and 3) collecting data about audience size and participation.

The GOT Technical Manager, in August, developed the "Operator's Training Guide," describing the terminal equipment and its operation, possible problems, and a sample reporting form (Appendix G.12).

GOT held a training session for aides in Juneau in mid-August. The session was designed to explain the ATS-6 project, and acquaint aides with terminal equipment and operation, as well as the daily log form for recording reception quality and audience size. At this session each aide was supplied with an "Operator's Training Guide," and daily log forms, to be returned to GOT each month.

In October, GOT informed all aides of a change in reporting procedures, to conform with NCC/Denver reporting practices (Appendix G.13). (ALED had been using a 1-to-5 picture and audio reporting code with 1 as excellent, down to 5 if distorted or very noisy. NCC/Denver requested that the 1-to-5 code be reversed, with 5 as excellent.)

The utilization aides were required to be present at the terminal site during all ALED broadcasts, turn the monitor on, record picture quality and audience size, and operate the VHF radio during interaction. Since several of the programs broadcast during the day were designed specifically for school children, and most of the monitors were located in schoolrooms, there wrs some modification of this requirement for aides to be present at every broadcast (Appendix G.14). By local arrangement where suitable, aides could instruct teachers in use of the equipment and reporting procedures and were not required to be present. This caused less disruption in the schoolroom and more directly involved the teachers in the programming for their students.

Although encouraged by GOT to submit further written reports or comments on the project and its programming, most aides did not. This could be attributed more to personalities and life styles of the individual aides, rather than to project disinterest. Several aides did write enthusiastically and often to GOT, but this was the exception. While most readily talked with GOT personnel during site visits, most did not commit their comments to writing.

With arrangements at many sites for the teachers to operate equipment during Instructional Programming, many utilization aides had the most direct contact with the ANM series, broadcast on Tuesday evenings and directed to adult Natives. Unsolicited comments on programming were primarily regarding this series, and were generally included with the monthly billing each aide was required to submit to GOT. Reaction was especially enthusiastic to filmed segments about their own villages, or topics discussed on ANM that were especially relevant to a particular village. A sampling of utilization aide comments:

"Each time we see a show it seems to improve. It's fun for me to be a part of an experiment that proves people can work together. The Tuesday night show is the best thing that's ever happened to us here. The Native people feel involved. They see places they have been, they see people they know. They can see their problems on the air, ask questions directly, then and speak to the people, etc. The older Natives smile as they hear a tongue they can understand, speak to them. I feel as though we're building history..." --Aniak

"My opinion on the TV programs are interesting. But some I don't understand when they don't stop and show pictures of what they are talking about...I think most of the people here enjoy the programs." --Chuathbaluk

"The adults who attend the Alaska Native Magazine, also enjoy this program and wished it was longer than one hour..." --Sleetmute

"It has been very very cold. As cold as 56 degrees below. That seems to make the TV act better. We all so hope you will cut the opera Christmas shows. The Natives said that was just bum. (Old Eskimo saying.) I've never had a bit of trouble, never had to adjust the dish since this fall. It's been the best job I've ever had..." --Aniak

"I'm writing a note with this last Daily Log which was for last month and this month. I really don't have much to say. only thing people here miss watching TV." --Chuathbaluk

The publicity portion of the utilization aide's responsibilities was not as successful as had been hoped, for a variety of reasons. One primary obstacle during the first months of program broadcast was scheduling changes, which created some confusion as printed schedules were revised. Information on ANM program topics was distributed to utilization aides as decisions were made by the consumer committee and KUAC developed its broadcast schedule, but lack of local publicity still seemed to be a problem.

On December 23, 1974, GOT received a letter from the utilization aide at Galena: "At the ANM program of December 17, we had only 3 members present for the whole program. All thought the information concerning Pipeline Impact was very good, and were impressed with the direct interaction part of the program. Three other community members were at the program for the last few minutes and also enjoyed what they saw. Hopefully with more publicity in the future, the program will be more of a success here in Galena. I think it will be." From utilization reports in March, GOT learned that attendance had also dropped off in Valdez, at Aniak (competition with bingo), and at Angoon.

At several locations (Angoon and Nenana among them) location of the TV monitor in the school negatively affected adult attendance for ANM. According to aide's comments, some adults found the school a "foreign" and "authoritarian" place, and were reluctant to enter it. In several sites the school was located some distance from the center of the village, which was another damper on attendance. The aides in Angoon and Nenana felt that having a monitor in the town hall or local community center would have improved adult attendance and participation.

Despite (verbal) contact with aides by GOT personnel, publicity seemed to be a continuing problem. For example, in January 1975, the film crew from KUAC learned that the aide in one of the villages was under the impression that she was only supposed to announce the ANM program in her village the first week, and was not to "push" attendance. Apparently, the program publicity GOT expected the aides to perform once they received schedules was not clearly understood in the villages.

Direct GOT (verbal) contact with the aides about publicity in early 1975 did not produce any noticeable change in the aides' activities. Those who were personally outgoing continued to publicize programs by visiting friends and neighbors or making and distributing posters; those who were not didn't appear to increase their activities.

A summary of utilization aides daily logs, with audience participation, is given in Table 19.

TABLE 19. AVERAGE AUDIENCE SIZE PER PROGRAM SERIES 6-30-75
ALASKA ATS-6 REMOTE SITES

VILLAGE	HEALTH		BOLD		TEACHER TRAINING		ANM	
	Adults	Students	Adults	Students	Adults	Students	Adults	Students
ALLAKAKET	6	44	6	41	0	0	29	38
ANGOON	4	50	4	49	0	0	16	4
ANIAK	3	12	3	15	1	0	7	1
CHUATHBALUK	4	37	4	37	0	0	11	13
CRAIG[a]	3	91	3	91	0	0	0	0
FAIRBANKS[b]							638	
GALENA[c]	3	23	3	23	0	0	7	5
MCGRATH	3	27	2	27	3	0	8	6
MINTO	4	39	4	36	0	0	5	2
NENANA	3	53	3	53	2	0	6	5
NIKOLAI[d]	2	29	2	29	2	0	14	12
PETERSBURG[e]	4	58	4	53	2	0	113	60
SLEETMUTE	4	30	4	30	3	0	15	18
TANANA	3	30	3	20	2	0	17	13
VALDEZ	5	102	5	100	2	0	3	0
YAKUTAT	2	32	2	38	3	0	4	4

Information compiled from daily log reports submitted to GOT by utilization aides.

a) Estimate; program tapes supplied until equipment fully operational in March 1975 - no logs returned.
b) KUAC-TV audience survey estimate. (Programming not used in schools.)
c) Program tapes supplied until equipment fully operational in January 1975 - logs returned beginning February 1975.
d) Data gathered from daily site polls - no logs returned.
e) Local Cable-TV audience estimate for ANM.

INTERACTION

An integral component of user involvement with the ALED experiment was the interaction possible through a VHF audio link over ATS-1, enabling all sites to talk with either the Fairbanks or Juneau studios during broadcast.

The Instructional Programming series were designed to present program materials during the first 15-20 minutes, with the final 10-15 minutes devoted to questions and responses from terminal site audiences. The first segments of the Basic Oral Language Development and Health Education programs were broadcast from Fairbanks, then broadcast was turned over to the Juneau studio for the interaction segment. In Juneau, an on-camera studio teacher reviewed the material presented in the program, asked questions about the material, and received the responses from the sites.

The ANM series, broadcast live from Fairbanks, was designed to answer viewer questions of the on-camera host or guests any time during the program. All other programs broadcast live over ATS-6 were also designed to accommodate viewer questions.

While two-way voice communication was a major program plan in the development of the ALED experiment, its effectiveness could not be known until implementation.

Utilization of interaction varied at each terminal site; some responded consistently and enthusiastically over the VHF link, some seldom, if ever, responded.

There were a number of variables involved with interaction that could not have been anticipated and which worked to inhibit viewers.

The greatest variable was that there was no guarantee that all sites were watching, or would respond to questions during interaction segments. During the first segment of Instructional Programming, GOT Juneau attempted to contact all sites on the VHF link to prepare them to stand by to respond during the interaction segment. This meant that terminal VHF equipment had to be on in order for them to receive the call and prepare to respond.

Through a basically trial and error method, the interaction teachers discovered that there was greater response to a specific question directed at one specific village, rather than asking a general question and waiting for any site to respond.

The attention span of the Basic Oral Language Development and Health Education viewing audience was another variable. After watching a 15-20 minute program, students were not always eager to sit still for another 10-15 minutes to listen to questions and respond. Generally there was interest when questions were being answered from their classroom, but attention wavered when other sites were responding.

GOT production staff discovered that there was greater interaction response from sites visited after the ALED network was operational, when time was spent getting to know the teachers and taking pictures of the children, for use during interaction program segments.

"The programs for children on the satellite TV are greatly enjoyed by the children and kindergarteners who watch them. Seeing their picture during interaction is also looked forward to by many of them." --Sleetmute

In several schools (Nenana, Allakaket and Minto) the TV monitor was not located in the primary grade classrooms. The proper age viewing audience had to come into the classroom to watch, or the wrong age group watched and found the show too slow-moving or uninteresting, which affected interaction response.

The interest of the classroom teacher was also a major variable to active interaction participation. At several sites the teacher was not particularly receptive to ALED programming, or received little administrative support, and rarely participated in interaction.

Interaction participation was very minimal from Galena, where the terminal was not operational in the schools until December 1974, and the VHF radio was not operational until early 1975. The reception problems in Craig (not operational until March 1975), also made it impossible for Craig to participate in interaction until near the end of the project. Once all equipment worked, however, Craig students participated enthusiastically.

There were other problems that affected adult participation in interaction during ANM as reported by the utilization aides. Some felt that discussions moved on too quickly before viewers could ask the questions they wanted to, and were then reluctant to break into the new discussion. Some people didn't like pressing the button and speaking into a microphone. Others felt that the teachers inhibited villagers from responding (Appendix H.34).

The design of the VHF audio system required that while asking a question, sites change their audio S-band receiver channel, which allowed them to hear only the audio from the studio and avoid feedback. Thus while one person at a site asked a question, the others at that site could not hear the question unless the studio host repeated it. This was confusing to many.

Overall, the utilization of interaction was greatest at terminal sites which had the most personal contact with GOT personnel and understood the project. The technical knowledge required to talk on the radio was minimal, but still intimidated some.

From project start to end, interaction response increased, as users became more familiar with the system, and surer of themselves in using it.

"Probably the most impressive thing is that we can really talk to the Juneau station and that the surrounding participating villages can actually be reached and the children can hear the replies." --Valdez

Table 20 gives the completion milestone of field activities and user involvement.

Total project utilization costs are shown in Appendix J.2.

TABLE 20. FIELD ACTIVITY AND USER INVOLVEMENT COMPLETION MILESTONES

		MILESTONES	1974												1975											
			J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
CONSUMER COMMITTEE	ECE BOLD Health	GOT Community Contact	▨	▨																						
		Member Selection		▲																						
		Meetings		▲		▲		▲			▲	▲														
	Alaska Native Magazine	GOT Native corporation contact	▨	▨	▨	▨	▨	▨	▨																	
		Member Selection						▲																		
		Meetings							▲	▲		▲	▲	▲		▲	▲									
GOT		GOT Utilization Site Visits	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨							
UTILIZATION AIDES		GOT Community Contact	▨	▨	▨	▨	▨	▨	▨	▨																
		Hiring									▨	▨	▨	▨												
		Site Reports										▨	▨	▨	▨	▨	▨	▨	▨							
GOT		Interaction											▨	▨	▨	▨	▨	▨	▨							

VII. PROGRAM SELECTION

LOO'S BOARDING
LOO'S SALOON

VII. PROGRAM SELECTION

INSTRUCTIONAL PROGRAMMING

One major component of programming planned for distribution in Alaska over ATS-6 was Instructional Programming, designed to meet the educational needs of rural Alaskan children. To best determine these needs, GOT established, early in the HET experiment planning phase, a close and continual working relationship with the Alaska Department of Education (DOE).

Representatives of the two agencies met together at the inception of the project for intensive periods of time to write or revise proposals for funds for the experiment. These meetings were productive, but sporadic. As the prospects of funding became more of a reality the meetings increased in number and took on the nature of planning for implementation of the proposed activities. These meetings increased in intensity and number (as often as two or three times per week) after the contract with NIE was signed (December 1973). During this time period, almost daily phone conferences were held.

There was no formal organizational structure established on paper, other than the designation of representative personnel for DOE and GOT. No decisions were made regarding the Instructional Programming without consultative meetings between the two. These meetings almost always included the GOT Experiment Coordinator and the Education Experiment Manager. The guidelines for the formation, organization and operation of the consumer committees grew out of these meetings.

In considering utilization possibilities for the educational component of the ATS-6 ALED experiment, the Alaska Department of Education input focused on two concerns.

First was the perception--by both "established" educators and the concerned public--that the state pays a heavy price for both rural student school experience and overall educational management. Such problems result largely from frustrating geographical and communication network constraints. Physically interfacing all or several components of the total educational process, without resorting to representative strategies, proves extremely time and resource consuming. As a consequence, physical travel is used sparingly and with little real cost efficiency.

A major concern, therefore, from the Department's point of view, was to establish and/or facilitate two-way communication between and among the various participants in the educational enterprise which approximated as closely as possible face-to-face communication.

An obvious partial solution to time and space restraints affecting effective and personal communications was the use of live video/audio communication. However, real experience in utilizing such a communication link was lacking among state educators. Thus, a second consideration of DOE in approaching the ATS-6 experiment was the possibility of gaining "hands on" experience in live video/audio communication--from a variety of viewpoints--which could be utilized to make sound decisions in a later point of time; for example, in relation to the increasingly probable establishment of an Alaskan satellite communications system.

While such experience could no doubt be gained from dealing solely with available, pre-prepared "packages" in teacher training, educational program or course offerings and management strategies, the Department felt the necessity of directing all experimental activity during ATS-6 toward identified needs of Alaskan students.

Identification of the educational needs of Alaskan students was based on a 1972 needs assessment study prepared for the DOE ("Critical Educational Needs in Alaska Statewide," Worldwide Education and Research Institute, Salt Lake City, Utah, 1972).

Based on this study, three critical educational needs could be identified that were particularly applicable to utilization of the ATS-6 ALED experiment:

1. Youngsters need to learn basic communication skills.
2. Learners need to learn good health habits and accurate information about sex and drugs.
3. Learners need instruction which recognized differences in individual learning style, and they also need more options in education than are now available to them.

In resolving or lessening these basic, critical needs the DOE placed emphasis on the contribution of and interplay among the three primary parties involved in any formal educational process--students, teachers and administrators. ATS-6 program strategies, as seen by the DOE, placed major emphasis on the student, but also involved in a meaningful and sustained manner both teachers and administrators. Given the limited time of the ATS-6 ALED experiment, the DOE also recognized that programming targeted to specific objectives was one step in achieving a resolution of the identified need.

Ideally, program focus and content would be determined only after considerable and broad-based input from educational and consumer groups around the state. However, it was possible to provide a generalized statement of DOE intentions for utilizing ATS-6 program time for educational experimentation. The DOE viewed ATS-6 as an opportunity for testing the validity of using such a communication link as a vehicle for providing more effective educational programs for the state's students. Therefore, although program content was focused on identified learner needs, the prime end result of the ATS-6 experiment was seen as acquisition of data regarding the feasibility of utilizing such technology to upgrade the state's educational programs rather than alleviation of an identified need. The major concern, from DOE's standpoint was whether or not the process was viable; large gains in pupil performance were not expected within the time frame allowed.

Based on this input from the Alaska Department of Education, four specific experimental program series for Instructional Programming were selected:

Early Childhood Education (ECE)
Basic Oral Language Development (BOLD)
Health Education
Teacher In-Service Training (TIST)

Continued DOE input resulted in the clarification of GOT's objectives for each of these programs.

Early Childhood Education

The overall objectives for this program series were:

1. To test the effectiveness of live television and two-way voice communication to provide training for mothers and preschool children.

2. To test the effectiveness of live television and two-way voice communication to provide cognitive, affective, and psychomotor activities for the development of preschool children.

The primary instructional group to be covered by the experiment was Native village children ages 1-5 with main emphasis on ages 3 and 4.

The design of this experiment centered around the mother, home and child. Manipulative activities would center around things commonly found in Native homes. Language activities primarily involved listening, and active response to commands. Affective areas centered primarily around self-esteem reinforcement. Instructions and dialogue with the parents would be in the Native and English languages. Language patterns for the child would be in English with encouragement to the parent for the child to learn the Native language at home. The set would be constant and involve a background of a home, the instructor/mother, student/child and normal household items and toys.

Basic Oral Language Development

The objectives of this experiment were:

1. To test the effectiveness of television and two-way voice communication to provide instruction directly to children for the development and improvement of oral production in the English language.
2. To test the effectiveness of television and two-way voice communication; to provide training for aides residing in rural communities in the techniques necessary to assist in teaching the development and improvement of oral production in the English language.

Children's language ability varies from one area to another so the age of the children receiving instruction also varied from 4 years to 7 years as determined by the viability of English in each target group.

The program would be broadcast in two 30-minute programs each week. The program presented oral English patterns in the form of dialogues, games, songs and activities. The format of the program was designed to elicit group responses from the students at the receiver sites. The children were to be guided by a teacher or an aide assisting the students to make the proper response and further reinforce the language patterns.

A lesson guide was to be supplied to all teachers, with instructions for teaching techniques and advance lesson preparation.

Health Education

For the Health Education experiment, half of the programs were to be produced in Alaska from consumer committee approved designs. The other half were to be "packaged" materials from national instructional programming sources. It was anticipated that this program series would consist of two half-hour programs each week; the first to broadcast the Alaska-produced program, and the second the canned film reinforcing the lessons of the first program.

The objectives for this Health Education series were not made more definite prior to consumer committee input, to allow maximum user involvement and participation in planning.

Teacher In-Service Training

The objective of the in-service training component of this experiment was to provide opportunities for in-service training, to upgrade the education and skills of rural teachers.

The primary instructional groups for this component were teachers, administrators and paraprofessionals.

Original planning called for three one-hour presentations and one final program of 1½ hours, designed as teaching workshops in the areas of ATS-6 program orientation and utilization, and other topics requested by rural teachers.

Interaction

In all Instructional Programming planning, each series was centered on the maximum use of the interaction link between sites and transmission studios via ATS-1. This would allow maximum student and teacher user involvement, for asking questions and responding to the lessons presented by each series program.

The overall objectives for these Instructional Programs were developed by GOT to aid in ALED project planning while leaving maximum content goals and objectives open for consumer input.

While selecting the general program areas, GOT felt it crucial to leave final program planning to the consumer committees, to allow these Instructional Programs to meet the needs and objectives that Alaskan rural consumers themselves could choose.

Specific program content for the ECE, BOLD and Health Education series were to be determined by consumer committees and the program design subcontractor. Full program responsibility for TIST was left in the hands of the Alaska Department of Education.

PUBLIC BROADCASTING

The Public Broadcasting Programming for the ALED experiment was planned to consist of two components:

1. Viewer-Defined Programming
2. PBS/NPR Interconnect

Viewer-Defined Programming

Viewer-Defined Programming was designed to utilize the interaction capability of ATS-6 to allow the rural Alaskan consumers of program material to determine the content and future direction of the program.

This experiment component was centered around a program titled Alaska Native Magazine (ANM), a one-hour weekly broadcast on topics of interest to rural Alaskan Native adults. Program content for the first programs in the series was to be determined by a Native consumer committee, which would then set priorities for handling future topic suggestions received during the program's interaction segment. Plans for the program included broadcast in several Native languages over ATS-6's four audio channels. With an on-camera Native host, program format included interviews with guests to explain and discuss topics directly affecting Native Alaskans, news of special interest to the viewing Native audience, on-location film footage of events and life-styles in rural Alaska, with special emphasis on interaction for viewers' questions and responses throughout each program.

A special production staff at KUAC-TV in Fairbanks was to produce all ANM programs, with program content chosen by the program's consumer committee, to be selected from the AFN and the four regional Native corporations represented in the ATS-6 footprint.

PBS/NPR Interconnect

The PBS/NPR Interconnect portion of the Public Broadcasting experiment was designed to transmit live national educational and news programming directly to all ATS-6 receiving sites. It was intended to determine, by audience measurement, the public reaction to live programming as contrasted to that received after delays of 12 hours to one month, with viewer interest in live programs to serve as a basis for determining demand in planning for operational communications system requirements.

Public affairs radio and television programs, originating at network headquarters of the Public Broadcasting Service (PBS) and National Public Radio (NPR) in Washington, D.C. would be transmitted via terrestrial systems to the Network Control Center (NCC) operated by the Federation of Rocky Mountain States (FORMS) in Denver, Colorado. From there, programming would be transmitted to ATS-6 and then to the earth stations in Alaska via one of the two S-band downlinks.

As envisioned in this program planning, some of the Alaska sites would be capable of originating informational and public affairs program material for transmission on one of the two S-band uplinks through NCC/Denver, for subsequent insertion in PBS and NPR national programs.

Since the hours scheduled for Alaska ATS-6 ALED use would rarely coincide with scheduled network distribution of programming Alaska might wish to obtain, plans called for NCC/Denver to record programs for transmission to Alaska when the satellite was available. The limited availability of ATS-6, as well as time zone differences, could result in some delay of program transmission, but would still provide Alaska with more direct national programming than was otherwise available to most of rural Alaska.

The PBS/NPR Interconnect was planned for use on HET 1 simultaneously during ALED program broadcasts on HET 2, and during Alaskan medical experiment use of HET 2.

EXPERIMENTS OF OPPORTUNITY

In early 1974 GOT made the decision to utilize any unused Alaska ATS-6 time (education time during holidays or any time allotted to Alaska and not scheduled for a particular use) for a variety of "Experiments of Opportunity."

GOT would make this time available to any state agency interested in designing programming to explore and demonstrate the suitability of satellite communications in meeting their own defined user needs.

GOT anticipated that this wider degree of state participation would generate additional enthusiasm for satellite communication and would also assist GOT in gathering together a broad base of support for a future operational system which would incorporate such capability.

Scheduling for this component would remain flexible, with full and adequate scheduling notification to NASA by GOT. Any production costs or operational expenses incurred were to be borne by the agencies participating.

VIII. PROGRAM DESIGN

VIII. PROGRAM DESIGN

The design process of preparing programs for production varied with each programming component of the ALED project.

INSTRUCTIONAL PROGRAMMING

To accomplish the design for Early Childhood Education (ECE), Basic Oral Language Development (BOLD) and Health Education intended for a specific Alaskan consumer audience, GOT chose to subcontract, to acquire additional expertise in television educational programming. Contact was made in the fall of 1973 with two potential agencies, the Center for Northern Educational Research (CNER) of the University of Alaska in Fairbanks, and the Northwest Regional Educational Laboratory (NWREL) in Portland, Oregon. Discussions with both agencies continued through the fall (Appendix H and H.1).

Based on these negotiations of design requirements and CNER's November withdrawal from consideration (Appendix H.3), in December 1973 GOT requested a bid waiver from the State of Alaska, for award of the design contract to NWREL (Appendix H.4).

On December 18, 1973 GOT entered into a contract agreement with NWREL for program design for ECE, BOLD and Health Education (Appendix A.3).

This contract called for production design of 32 ECE, 64 BOLD, and 64 Health Education programs, for a total of $220,457. Under this agreement NWREL established a program office in Anchorage, and immediately began design research and preparation of materials for presentation to the programs' consumer committees. (This original design contract did not include final script writing.)

Figure 16 gives NWREL management responsibilities and personnel. Instructional program design total costs are given in Appendix J.3.

Figure 16. NWREL Management and Personnel

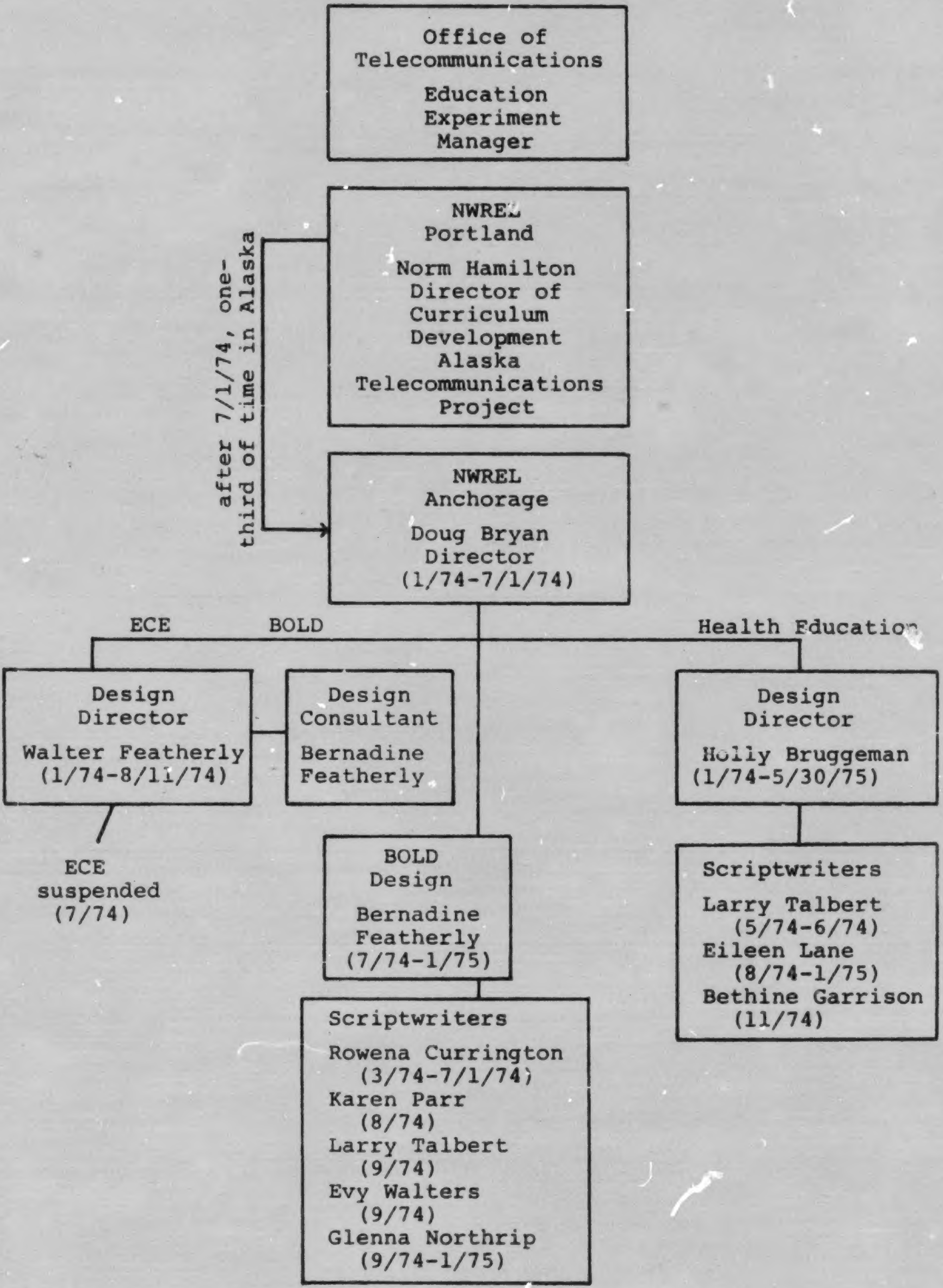

Office of Telecommunications
Education Experiment Manager
NWREL Portland
Norm Hamilton
Director of Curriculum Development
Alaska Telecommunications Project
after 7/1/74, one-third of time in Alaska
NWREL Anchorage
Doug Bryan
Director
(1/74-7/1/74)
ECE
BOLD
Health Education
Design Director
Walter Featherly
(1/74-8/11/74)
Design Consultant
Bernadine Featherly
Design Director
Holly Bruggeman
(1/74-5/30/75)
ECE suspended
(7/74)
BOLD Design
Bernadine Featherly
(7/74-1/75)
Scriptwriters
Larry Talbert
(5/74-6/74)
Eileen Lane
(8/74-1/75)
Bethine Garrison
(11/74)
Scriptwriters
Rowena Currington
(3/74-7/1/74)
Karen Parr
(8/74)
Larry Talbert
(9/74)
Evy Walters
(9/74)
Glenna Northrip
(9/74-1/75)

TABLE 21-A. PROGRAM DESIGN SCHEDULE December 1973

	73 Dec.	74 Jan.	Feb. Consumer Comm.	Mar.	Apr. Consumer Comm.	May Consumer Comm.	June	July	Aug. Consumer Comm.	Sept.	Oct. Consumer Comm.	Nov.	Dec. Consumer Comm.	Jan.
Early Childhood														
Alternatives			X											
Preliminary Designs					6	10			10		6			
Final Design						6			10		10		6	
Oral Language														
Alternatives			X											
Preliminary Designs					12	20			20		20			
Final Design						12			20		20		12	
Interactive Health														
Alternatives			X											
Preliminary Design					12	20			20		20			
Final Design						12			20		20		20	

Table 21 shows the contracted design completion schedule. The resources compiled by NWREL in its design research are given in Appendix H.5.

The Anchorage office of NWREL was opened in January 1974, with Doug Bryan as Director. Bryan resigned on July 1, and his duties were assumed by Dr. Norman Hamilton, NWREL's Director of Curriculum Development for the Alaska Telecommunications Project. Although headquartered in Portland, Hamilton spent approximately one-third of his time in Anchorage through January 1975, to supervise NWREL's efforts.

ECE and BOLD design were directed by Walter Featherly, beginning in January 1974. The funding suspension for ECE necessitated Featherly's termination effective August 11, 1974.

Bernadine Featherly, serving as a part-time BOLD design consultant from April through June 1974, assumed full-time BOLD design work in July. She held full BOLD design, as well as teacher manual compilation, responsibility through design completion in mid-January 1975.

The Health Education program series, and teacher manual, were designed by Holly Bruggeman, employed by NWREL/Anchorage from January 1974 through May 1975.

In January 1974, GOT met with NWREL to establish guidelines of the functioning of the three consumer committees. The result of this meeting was the decision that NWREL would draw up a formal charter on committee policies.

On February 11, 1974, a formal Memorandum of Understanding was drawn up between GOT, NWREL and program producers KUAC, regarding the consumer committee involvement in all phases of programming (Appendix H.6).

With selection of consumer committee members complete in early 1974, the first meeting was held in Juneau in mid-February. NWREL presented "Roles and Responsibilities of Consumer Committees" (Appendix G.4), which the committees, after discussion, approved.

Based on its agreement with GOT allowing maximum consumer committee involvement in program design, NWREL's first presentations to the committees consistently were in the form of alternatives to be selected. Once design goals and approaches had been chosen by the committees, NWREL presented preliminary program designs for suggestion and alteration, followed by final program designs for committee approval. This process continued through the last consumer committee meetings in November 1974, and approval of the completed final program designs. Final scripts were to be prepared by the production subcontractor, from these approved designs.

GOT had selected the three basic Instructional Program areas, viewing age groups, and number of programs in each series. All other program decisions were left up to the committees.

An example of the first stages of this committee input can be seen in the materials available at the first committee meetings. In preparing the consumer committees to select their own content priorities, NWREL distributed "Topics for the Discussion of the Consumer Committees," (Appendix H.7), to encourage discussion of some approach possibilities and alternatives. Also distributed at the first committee meeting was information regarding the 1972 ASSOS survey of Alaskan educational needs, asking if consumer committee members agreed with these assessments (Appendix H.7).

The three committees established the following basic program objectives during this first meeting:

Health Education

Priorities:

Physical	Mental	Habits (Hygiene-Safety)
Dental	Alcoholism	Dental Care
Vision	Suicide	Vision Care
Hearing	Self-Image	Smoking
Lungs (TB tine tests)	Emotional Awareness	Nutrition
Understand Body	Communications	Water Safety
		First Aid
		Use of Medication
		Sanitation

Puppets Selected:

Moose
Beaver

General Objectives:

1. To develop good health habits.

2. To encourage positive health attitudes.

3. To develop good self-concept, pride and cultural identity.

4. To promote good safety practices.

5. To develop knowledge of the body and its functions.

Early Childhood Education

Overall Goals:

1. To encourage parents to teach the Native language at home by the use of legends.

2. To develop good feelings about self, home, school, and social relationships--getting along, sharing.

3. To develop an understanding of the cultural similarities and differences between groups in Alaska.

4. To teach the children to become active rather than passive viewers.

5. To provide vicarious, real-life experiences that kids can't get in the village.

6. To integrate teachers and parents in follow-up activities.

Basic Oral Language Development

Overall Goals:

1. That the students acquire and develop the oral language skills necessary to communicate effectively.

2. That they have a good foundation of oral language proficiency upon which to base future successful achievement in reading, writing, and the more complex processes of thinking such as concept formation, problem solving and abstract reasoning.

3. That through the language they develop an understanding of a different culture and be able to function in it without losing personal identity in their own culture.

On February 28, 1974 GOT modified its contract with NWREL to reduce the BOLD series from 64 to 32 programs at no change in cost (Appendix A.3.1).

As requested by NIE for completion by March 15, program overviews were prepared by NWREL for GOT's submission for NIE evaluation prior to extending funding. Those overviews detailed program objectives, reflecting the advice of the first consumer committee meetings.

In submitting these expanded overviews to GOT, NWREL stated:

> While the program objectives should be helpful to evaluators, we hope that the central thrust of the evaluation will not center upon actual achievement of children. The use of television as a means of delivering instruction to children in the classroom is not unique to this experiment. Rather, the unique features indicate such prevailing concerns as:

1. The practicality of the media technology in Alaska.
2. The appropriateness of using satellite telecommunications for these instructional purposes.
3. The acceptability of the content of the programs as relevant to the needs and wishes of the communities.
4. The value of the media to the relief of isolationism of the Alaskan villages.
5. The cultural support that can be achieved through the media.
6. The importance of the media as a supplementary and supportive instructional resource to classroom teachers.
7. The effect of the programs on the improvement of the total learning resources of the community.

The production contract was signed March 18, 1974. Under this original contract, KUAC had final script writing responsibilities, requiring close coordination with NWREL and its program designs. It was agreed by both KUAC and NWREL in March that it would be impractical to have scriptwriters located in Fairbanks, since they would be working closely with NWREL in Anchorage. On the basis of this understanding, NWREL/Anchorage recruited and hired two scriptwriters in the spring of 1974, with salaries to be paid by KUAC.

NWREL continued to prepare the six preliminary program designs for submission to the next consumer committee meeting. This second meeting was held in Anchorage on April 18 and 19.

A sample of the preliminary program designs submitted to the consumer committees by NWREL are given in Appendix H.8. The details of committee review and modification at its April meeting are given in Appendix H.9.

This second meeting was the consumer committee's first look at NWREL program designs. All committees approved of the approach used in these preliminary designs, found them relevant and in keeping with committee program objectives, and written approval was granted for the first six preliminary designs by all three committees.

An example of the modifications made by the committees is reported in the minutes of the second BOLD meeting: one BOLD program plan called for the "use of hats of various sorts and sizes. The consumer committee suggested that the hats used be from the different cultural areas of Alaska, e.g., a beaver hat, a spruce hat, and not just cowboy and fireman hats, etc."

The ECE consumer committee also passed a resolution requesting that ECE be broadcast during school hours, rather than in the late afternoon, as scheduling then called for (Appendix H.9.1).

In April the GOT Education Experiment Manager verbally requested a longer lead time in NWREL preparation of materials for consumer committee meetings. Another important element of program design, in addition to the ongoing input of the consumer committees, was input from program producers KUAC in Fairbanks.

NWREL/Portland expressed awareness of this additional coordination effort to NWREL/Anchorage in a letter April 12, 1974:

> If this is indeed to be a cooperative effort with Juneau, Anchorage and Fairbanks all having input at every step, then a plan for coordination meetings must be established. I would suggest that Juneau initiate these

> meetings to be held in Anchorage on specified dates and that the agendas be set so that all can be prepared . . . Informal and casual agreements are all right, but I worry about clear understandings. This seems to be the mode which is developing between you and Fairbanks . . . Let's check all perceptions and document all informal and cooperative tradeoffs . . .

On May 3, GOT responded to this NWREL request for clarifying the coordination effort between GOT/Juneau, KUAC/Fairbanks and NWREL/Anchorage (Appendix H.10). At GOT's request, NWREL was to submit program designs to both KUAC and GOT five days prior to consumer committee meetings, with contractors and GOT to meet together the day before all committee meetings.

The third consumer committee meetings were held in Fairbanks on June 5 and 6. Six final program designs and ten additional preliminary designs were presented to the committees by NWREL. The minutes for each committee are included in Appendix H.11.

Specific decisions reached by the committees in June were as follows:

Health Education

1. Approved puppets, set design and characterizations.
2. Approved sequencing of 64 lessons.
3. Selected Right On! as series title.
4. Approved first six final, and next ten preliminary program designs.

Basic Oral Language Development

1. Selected Amy and the Astros as series title.
2. Accepted decision that interaction portion would originate in Juneau.

3. Established procedures for members to help supply Native artifacts to program producers.

4. Approved first six final, and next ten preliminary program designs.

Early Childhood Education

1. Passed resolution giving regional corporations authority to select appropriate Native legends for program use.

2. Approved first six final and next ten preliminary program designs.

Program final designs for Health Education and BOLD, based on approved designs, are given in Appendix H.11.1 and H.11.2.

In addition to scripting 32 Health Education programs, NWREL also had the responsibility of selecting 32 packaged health films to accompany each of the original lesson programs. NWREL contacted a wide variety of film distributors, and previewed all possible films on original program topics. In selecting suitable films, attention was given to age of the viewing audience (8-10 year old children) as well as relevance to rural Alaska. From these previews and recommendations by NWREL, the consumer committees approved all final selections. The first 16 films had been selected by August, with the remaining 16 selected by the end of December.

In early June, NWREL submitted a progress report to GOT, with program accomplishments to date (Appendix H.12). Table 22 gives the revised program production schedule (reduction of BOLD programs to 32).

NWREL's reporting procedures to GOT were formalized in early August with GOT's request for bi-monthly financial status and work performed reports beginning August 15 (Appendix H.13). These reports were required to enable GOT to complete

6/7/74

TABLE 22. Revised Production Calendar

Early Childhood

	Feb. Consumer Comm.	Mar.	Apr. Consumer Comm.	May	June Consumer Comm.	July	Aug.	Sept. Consumer Comm.	Oct. Consumer Comm.	Nov.	Dec. Consumer Comm.
Alternatives	X										
Preliminary Designs			6		10			10	6		
Final Designs					6			10	10		6
Teacher's Manual (first half)							X				
Teacher's Manual (second half)											X

Basic Oral Language Development

	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Alternatives	X										
Preliminary Designs			6		10			10	6		
Final Designs					6			10	10		6
Teacher's Manual (first half)							X				
Teacher's Manual (second half)											X

Health Education

	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Alternatives	X										
Preliminary Designs			6		10			10	6		
Final Designs					6			10	10		6
Teacher's Manual (first half)							X				
Teacher's Manual (second half)											X
First selection of commercial material						X					
Second selection of commercial material										X	

its bi-monthly status reports to NIE.

In late June KUAC prepared a written Memorandum of Understanding to NWREL, detailing the maximum talent that could be provided in program production (Appendix I.1 and I.2). Discussions continued between NWREL and KUAC on scriptwriting responsibilities. KUAC's $10,000 budget for script writing could not cover the $10/hour full-time pay for 2 scriptwriters for 10 months, as NWREL desired. In discussions with KUAC, NWREL expressed its practical concern for increased supervision of the writers. By contract revisions (Appendices A.3.2 and A.5.2) effective July 15, $8500 was shifted from KUAC to NWREL to accomplish all remaining final script writing. (Negotiations between the two agencies resulted in payment for all script work completed prior to the contract revision.)

A total of six scriptwriters produced finished BOLD scripts, from March 1974 through January 1975. The first six scripts were written by Rowena Currington in March and April. Modification of the number of characters for BOLD required extensive revision of these six scripts, performed in August by NWREL/Portland staff and Karen Parr, who also wrote the music and songs for the series. In September, Evy Walters assisted in the revisions of one script, and Larry Talbert completed the slapstick segments. The sixth and final writer for BOLD, Glenna Northrip was hired in September, and worked on all remaining scripts through mid-January 1975.

Scriptwriting for the health education series began in May, with Larry Talbert working through September on all the muppet segments, and initial scripts. All BOLD scripts were revised and/or written by Eileen Lane from August 1974 through mid-January 1975, with assistance from Bethine Garrison on one script in November.

(Scriptwriting personnel detailed in Figure 16.)

As final designs and initial scripts were being completed in June, GOT was informed by NIE that the FY 75 budget request was to be extensively reviewed before any funding would be made. This decision placed the design and production of two Instructional Programs, BOLD and ECE, in a state of suspended animation for the remaining crucial months prior to broadcast start.

On June 28, NIE extended GOT's FY 1974 planning grant through July 31, 1974, requesting detailed schedules and budgets for the project, and separate costs of ECE and BOLD development, to be submitted by July 15. All funding for both BOLD and ECE was suspended after June 30, 1974. NIE agreed to make its decision on the funding of these two program components on or before August 31, 1974 (Appendix A.1.5).

At GOT request in June, NWREL prepared project review reports on BOLD and ECE, containing all information on the problems, objectives, processes and theoretical justification for the instructional approaches to be used. NWREL submitted the finished reports to GOT on July 12, to serve as a basis for NIE review and potential reinstatement of the two series.

Agency approval procedures for final scripts were determined at a coordination meeting in July. With receipt of consumer committee final design approval, NWREL was to provide KUAC with the completed final scripts. With KUAC approval of the scripts' "producibility," the scripts were to be signed, and two copies sent to GOT. With GOT signed approval, the scripts were then to be returned to NWREL (Appendix H.14). (Due to time deadlines, verbal approval was followed by written confirmation.

GOT program planning proceeded despite funding uncertainties, and planning for the next consumer committee meetings continued.

In July, GOT also requested NIE's approval for authorizing the preparation of ten BOLD scripts scheduled for delivery by August 30, at a cost not to exceed $750. This work proceeded on the unofficial understanding from NIE that BOLD would be funded. GOT wished to have the series ready for production if the NIE design review was favorable. Should the review recommend discontinuing BOLD, then a minimum of additional money would have been spent in keeping the series ready for possible production.

In the process of review, NIE also reduced the number of ECE programs (still not funded) from 32 to 16, for broadcast beginning in January 1975 (Appendix A.1.5.a). In mid-July, NWREL notified GOT of its compliance in suspending ECE program design (Appendix H.16). In July NWREL also submitted to KUAC the first 6 final scripts for Health Education. The first 6 BOLD scripts were submitted to KUAC in late August (four were later recalled for revisions).

On August 23, NIE verbally informed GOT of its decision to continue support for BOLD, and to suspend all further support for ECE. In response GOT requested NIE reaction to seeking outside funding to continue ECE development (Appendix H.17). NWREL also supported ECE continuation if funds could be found (Appendix H.18).

On September 3, NIE verbally informed GOT that its support for BOLD was temporarily suspended due to uncertain FY 1975 funding for NIE. NIE had no objection to GOT's search for other funds for ECE, suggesting that GOT might also seek funding elsewhere for BOLD. On September 12 NIE informed GOT that it would be informed of NIE's decision on BOLD as soon as it was made (Appendix A.6.3).

During this period of uncertain funding for BOLD, with program broadcast scheduled to begin in October, GOT informed NIE of its decision to continue program design and preparation for production (Appendix H.19): "We are presently allowing the program to proceed so that it can meet its scheduled air date of October 7, 1974. We will have to stop all work on the program shortly after that date if we are not assured of adequate funding to continue. Even our present actions with regard to the program may seriously jeopardize progress in other areas."

NIE's response in October (Appendix A.6.4) was an indication of full support for BOLD if NIE was funded. NIE acknowledged GOT's continuation of the BOLD series, with the understanding that money spent by GOT for series design and production might not be reimbursed by NIE.

BOLD design did proceed, despite lack of certain funding, at GOT's understood risk. Official funding approval was not granted by NIE until February 14, 1975 (Appendix A.6.5).

Despite funding problems, the consumer committee meetings planned for early September were held in Juneau. (Minutes of all meetings in Appendix H.20.)

The ECE committee was informed of the NIE decision to discontinue funding for the series, and was given several alternatives:

1. Accept NIE decision and drop program.
2. Support the seeking of additional funds ($45,000) to reinstate program. (Funding would have to be available by October 1 for the programs to be broadcast beginning in January.)

The committee's dissatisfaction with the NIE decision resulted in two resolutions, endorsed by all other consumer committee members as well (Appendix H.20.1).

The Health Education consumer committee, at this September meeting, previewed the first four Right On! programs that had been produced, offering the suggestions for future design that 1) the pace of shows be quickened, with shorter skits and more puppets; and 2) more music be included. The characterization of the health aide met with committee approval, although they agreed that she needed some "polishing" in delivering her lines. The committee also approved the teacher's manual NWREL had prepared and the show's theme songs. (Table 23 lists Health Education program topics, as written, based on consumer committee recommendations.)

The BOLD consumer committee was also informed of the funding uncertainty for the series at this September meeting. Designs for programs 17 through 24 were approved, with some modifications. Members were told that production would begin immediately on BOLD program #1.

The teacher's manuals for BOLD and Health Education, approved by the consumer committees at their September meeting, were prepared by NWREL program designers. Each provided teacher orientation on the overall Alaska ATS-6 project, program objectives, and specific classroom activities to reinforce each program's lesson. The manuals, to accompany all 32 programs in each series, were prepared in August, with the first 16 lesson plans distributed in September, and the final 16 distributed in December. (A sample from the manual for Program 1 in Health Education is given in Appendix H.21. The BOLD Program 1 sample is Appendix H.22.)

Carrying out the ECE consumer committee resolution to seek other funding for the ECE program series, GOT made inquiries to several federal and private agencies in September 1974. Inquiries were directed to HEW Region X, Atlantic Richfield Co., and agencies within the U.S. Department of Education. Given the October 1 GOT

TABLE 23. ALASKA ATS-6 HEALTH EDUCATION PROGRAM TOPICS

Program No.*	Topic
1	General Health
3	Personal Hygiene and Health Habits
5	Eyes and Eye Care
7	Ears and Ear Care
9	Environment and Clothing
11	Frostbite and Cold Weather Hazards
13	Germs
15	Disease
17	Disease Control
19	Nutrition
21	Nutrition
23	Dental Health
25	Dental Health
27	Physical Fitness
29	Individual Differences
31	Family Life
33	Midway Review
35	Sources of Emotion
37	Emotional Expression
39	Medications
41	Alcohol
43	Changes
45	Arctic Survival
47	Community Life
49	Communication
51	Pollution and Sanitation
53	Accident Prevention
55	Recreational Safety
57	First Aid
59	Hospitalization
61	Health Careers
63	Review and Summary

*Odd numbered programs were those originally designed and produced for the Alaska project. Even numbered programs were pre-packaged films accompanying each original production (listed in Appendix I.4).

deadline for finding funding, and the already-completed FY budgeting of these agencies, the funding search for ECE never reached a formal proposal state.

On October 31, GOT modified its contract agreement with NWREL, reducing funding $27,669 due to NIE's ECE discontinuation (Appendix A.3.2).

In early November, NWREL requested an additional $17,500, stating that while GOT cut BOLD funding in the 10/31/74 modification, it did not decrease work to be performed on the series (Appendix A.3.3).

A second contract modification with NWREL was approved by GOT on 11/15/74, increasing funding by $10,500, to complete BOLD design, and preparation of teacher manuals for BOLD and Health Education (Appendix A.3.4).

With programs in production, and the first month's programs already broadcast, the Health Education and BOLD consumer committees held a final meeting October 31 and November 1. At this meeting all remaining final designs were approved. The Health Education committee also gave final approval to the second and final group of packaged health films, from possibiiities selected by NWREL. (The list of all health films selected and broadcast is given in Appendix I.4.)

At this final BOLD consumer committee meeting (minutes in Appendix H.23), members viewed BOLD Program #5. This was the first opportunity for the committee to review the production, which had been broadcast beginning October 7.

While some members indicated enthusiastic student response to the program, the consumer committee was generally disappointed with the program. The dissatisfactions centered around the feelings that the puppets did not meet design specifications, and had limited facial expressions and mobility. Generally, they felt the program to lack warmth in characterizations and delivery. The puppet designer agreed to perform modifications the committee requested. Further committee suggestions included music accompaniment for all songs, and a story line with more interludes in the programs.

Despite these dissatisfactions, the committee concluded its work by formally stating its support for the overall program: "We, the members of the ATS-6 consumer committee on Basic Oral Language Development, feel that the program is meeting the overall objectives and cultural relevancies, and fully support the continuation of the ATS-6 program."

On December 19, the NWREL Board of Directors viewed segments of BOLD program #11 and Health Education Program #31. Reported Hamilton: "There were no negative reactions to either program. The Board was pleased that NWREL had been a part of the project" (Appendix H.23.1).

NWREL continued to deliver finished scripts to KUAC through January. While the first 16 Health scripts were behind schedule, due to initial revisions, delivery of the final 16 scripts was well ahead of scheduled delivery dates. The final script was delivered to KUAC during the first week of January 1975.

BOLD script delivery to KUAC was delayed through August and September by funding uncertainties and revisions. The final script was delivered the third week in January 1975, when NWREL closed its Anchorage office. (The details of BOLD script and production conflicts that necessitated extensive negotiation and coordination in the fall of 1974 are detailed in PROGRAM PRODUCTION/BOLD.)

A final extension of NWREL's contract was made on March 10, 1975, extending NWREL personnel consultation to GOT and KUAC through May 15, 1975. This change increased total NWREL contract cost by $11,637 (Appendix A.3.5).

Design milestones are given in the following Tables:

Health Education:	Table 27-A	Milestone Schedule	7/20/74
	Table 27-B	Completion Milestones	6/30/75
BOLD:	Table 28-A	Milestone Schedule	7/20/74
	Table 28-B	Completion Milestones	6/30/75

Teacher In-Service Training

Design for Teacher In-Service Training (TIST) programming was the responsibility of the Alaska Department of Education (Appendix H.24). With the increase in satellite time available to ALED, TIST was increased from the four programs originally planned to 32 half-hour programs.

In May of 1974 DOE established its task force for TIST programming (Appendix H.25), and set guidelines for TIST planning and design (Appendix H.26). These guidelines called for the agency task force to determine program objectives, with script preparation performed by an independent program producer. An interaction coordinator was also included in TIST planning as well as any personnel needed to produce written supplementary materials.

On August 1, the DOE contracted with Aaron Productions of Juneau to: "Design, script and produce a series of 32 one-half hour television programs directed at training teachers in the area of reading instruction for broadcast over the ATS-6 satellite." The contract was effective through October 31, 1974 for a total of $6,000 (Appendix H.27).

As actual design work began, funding within DOE became a problem, and focus of the series began to change. DOE's decision was to air a pre-produced teaching series of high quality, rather than a lower quality, low-budget DOE-produced series.

From the program producer's survey of available video teacher training material, the task force selected Dr. Rudolph Dreikurs' "Motivating Children to Learn" series which included filmed lectures and a teacher manual.

As planned by the program producer, the series was now to include the Dreikurs series as well as programs using DOE resources to answer specific teacher problems relayed via the interaction segments, and teacher-produced materials (Appendix H.28). To encourage individual teachers to prepare their own video or slide presentations, verbal agreement was reached between DOE and the University of Alaska, to allow University credit to teachers for original productions (details were to be finalized after series start).

Design scheduled milestones for TIST are given in Table 29-A; completion milestones for design are shown in Table 29-B.

PUBLIC BROADCASTING

Viewer-Defined Programming

The format design and program topic selection for Alaska Native Magazine was the responsibility of the consumer committee, selected at GOT's request by Alaskan Native regional corporations. In addition, the program producers, KUAC, also requested committee input on ANM production staff hiring. Once the general topics were chosen by the committee, the KUAC-ANM production staff had the responsibility for script development, allowing maximum time for village viewer's interaction.

The first ANM consumer committee meeting was held on July 1, 1974 (Appendix H.29) Decisions reached centered on establishing a program format with a positive approach, avoiding "Madison Avenue" type language that would alienate viewers. The basic program format discussed and approved was to have an on-camera Native program host to interview guests and handle interaction calls, plus on-location film footage, rural Alaskan news and substantial interaction time in each program. Each show was to be centered generally around a topic of interest to the viewing Native audience.

From the possible topics for presentation, selection was made for the first six programs:

1. Native Profile, state news and previews of next two programs
2. Rights vs. Responsibilities
3. Native/Non-Native Cooperation
4. Environmental Protection
5. Fisheries
6. Consumer Protection

The decision was also reached to accept the program title Alaska Native Magazine, and to broadcast the program simultaneously in English, Yupik, Thlinget and Athabascan.

By the second ANM consumer committee meeting on August 12 (minutes in Appendix H.30), KUAC program production staff had prepared notes for the first program based on comments and discussion of the first consumer committee meeting (Appendix H.30.1). Discussion at this second meeting centered on possible program topics, expressing the views that the "pace" of the programs be slower, and that the ANM film crew not decide beforehand how to treat subjects filmed on location. Fisheries was dropped back to program #8, to allow for a more timely subject for program #6. No decision was made on the replacement program. The committee also decided that the first show "may be such as the producer/reporter had outlined, with the provisions that the change theme be dropped, and an emphasis be placed on previews of coming programs."

The third ANM consumer committee meeting in October (Appendix H.31) selected programs 7 through 9:

7. Education
8. Land Claims
9. Health Care

Other decisions reached included authorization for ANM to ask viewer reaction to dropping the New Year's Eve show, and replacing the Christmas Eve show with pre-produced programs, and the committee's desire not to avoid controversy, but to "tell it like it is."

For this third meeting, the GOT Utilization Manager developed a form for detailing consumer committee topic suggestions to supply ANM production staff with the committee's suggestions on resources and procedures for developing each general topic area.

At the fourth ANM consumer committee meeting in November (Appendix H.32), the suggestion was made that street interviews on each program's topics might be added. Future program topics selected were transportation, winter food gathering and dog races (Iditarod).

At the next meeting in December (Appendix H.33), final selection of the last meeting's topic suggestions was confirmed. In addition, three programs were selected to be devoted exclusively to topics suggested by village residents, with on-location filming to meet the requests. A program on oil development was also selected by the committee.

The February committee meeting lacked a quorum, and no program decisions were reached.

ANM consumer committee program topic selection was completed at the final meeting on March 12 and 13, 1975 with the final six program topics chosen (Appendix H.34):

1. Mo Meets the Puppets (ANM series host Moses Wassilie to interview puppets of Instructional Programs)
2. Changing Face of Alaska
3. Native Arts Festival
4. College Life
5. Whaling
6. Native Women

Detailed consumer committee topic selections are given in Tables 24-A through 24-C. A comparative list of ANM program topics broadcast is shown in Table 25.

Scheduled design milestones for ANM are given in Table 26-A, for comparison with design completion milestones in Table 26-B.

PBS/NPR Interconnect

GOT first contacted the Public Broadcasting Service (PBS) and National Public Radio (NPR) about possible ATS-6 Alaska Interconnect in the spring of 1973. A formal request was made by GOT in January of 1974 (Appendix H.35 and H.35.1). Negotiations continued through the spring of 1974 involving a trip to Washington, D.C. by GOT's Satellite Experiment Coordinator to meet with PBS/NPR officials. During this time period, the decision was made to piggy-back Interconnect transmission on one Alaska S-band downlink during transmission of other programming on the alternate S-band.

TABLE 24-A. ANM CONSUMER COMMITTEE TOPIC SELECTION OCTOBER 1974

TITLE	OBJECTIVE	PROCEDURES	RESOURCES
1. Limited Entry (State Fisheries Policy)	inform on Act and its implications inform problems fishermen themselves see	talk to those affected (when legislature organizes-3rd week in January)	panelists from Limited E Comm. fishermen who know probl film of fishermen
2. Culture/ Entertainment	provide holiday entertainment using various Native cultures	solicit (on ANM) invitation to film singing	Buffie Saint Marie, 3- Gei-san dancers, village singers, Choir of Nort, poetry, Featurette Russi Christmas
3. Housing	contrast regional housing from: structure/design utilities financing eligibility	check with Tim Kennedy on SRP film in Bethel?	Tlingit-Haida housing fi Minto film, Bethel Fil Guests: Bob Loescher. Bob Butler Bethel Housin
4. Pipeline	predict long-range effects on Native people	touch on economic, environmental, political aspects of pipeline	Who: Joe Upickson Eben Hobson Charlie Edwardson Larry Carpenter Cordova Fisheries
5. Native Manpower	to show availability of training programs & employment opportunities/Alaskan hire	case studies-employment opportunities (with variety) stay within footprint	Tom Evans, ANM Judith Kleinfeld (Reg. Co Alyeska (Patton) Terry Pegues State Dept. Labor
6. Regional Corporations Progress	Corporations development (projects) channels of participation	where corporations are participating in beneficial progress	MOS Regional Corp. represen location filming of proje
7. Communications	better communications RCA/ATS-? Satellite/TV		
8. Sea Mammal Act	IEA-show intent of act/ problems, advantages subsistence/white sealers	talk to those affected	carvers location filming

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TABLE 24-B. ANM CONSUMER COMMITTEE TOPIC SELECTION DECEMBER 1974

TITLE	OBJECTIVE	PROCEDURES	RESOURCES
Oil Development (1 or 2 programs contingent on response)	"To inform," to answer why the lease, "why the development," why off-shore (heavy feedback response)	cover Continental Shelf Development hearings in Anchorage in Feb/March, critique of off-shore development	Arland Tussing Frank Tupper Ed Wayburn (Sierra Club KPBS-TV outs from Santa Barbara oil spills Katchnak Bay Defense Fund
Dog Races	to feature Alaskan dog racing	show someone training dogs?	North American Iditarod pool helicopter coverage? last year's footage BP - George Attla - profil
Winter Life (subsistence)	to show traditional winter food gathering		Tommy Andgdotuguk
Transportation (1 or 2 programs contingent on response)	to show various modes of Alaskan transportation: air, land, sea	"barge, air taxi, etc."	Walter Parker FAA official on Wien? Bud Hagburg President of Wien VP of Wien?

TABLE 24-C. ANM CONSUMER COMMITTEE TOPIC SELECTION MARCH 1975

TITLE	**OBJECTIVES**	**PROCEDURES**	**RESOURCES**
No Meets the Puppets	**to entertain and inform (parents)**	**visit sets show segments of programs**	**GERM et al Amy & Millie & Klara short profile of health aide segments (Amy's song)**
Changing Face of Alaska	**to document a life style before it disappears**	**show contrast between old and new, young and old**	**parents & children old & young Martin Strand's slides Native study programs Tommy O**
Native Arts Festival	**to promote and preserve Alaska Native arts**	**sample dancing, music, crafts, etc.**	**Alaska Native Arts Festival**
College Life	**to inform**	**1 or 2 students from each region follow their activities**	**University SOS Bethel High School**
Whaling	**to inform**	**show Lenny Kamerling's film feature woman's role in whaling**	**Lenny Kamerling's film**
Native Women	**to entertain & inform**	**show as many women as possible women's rights**	**library footage**

TABLE 25. ALASKA NATIVE MAGAZINE PROGRAM TITLES

Program Number	Date	Program Title
1	October 8	Introduction and previews
2	October 15	*Rights vs. Responsibilities*
3	October 22	Native/Non-Native Cooperation
4	October 29	Fisheries
5	November 5	Consumer Affairs
6	November 12	Environmental Protection
7	November 19	Education
8	November 26	Native Land Claims
9	December 3	Health
10	December 10	Housing
11	December 17	Pipeline Impact
12	December 24	Culture, Entertainment
13	January 7	Manpower
14	January 14	Viewer-Defined
15	January 21	State of the State Address
16	January 28	Limited Entry
17	February 4	Regional Corporations
18	February 11	Communications
19	February 18	Viewer-Defined
20	February 25	Transportation
21	March 4	Sea Mammal Act
22	March 11	Viewer-Defined
23	March 18	Offshore Oil
24	March 25	Winter Life
25	April 1	Dog Racing
26	April 8	Native Arts Festival
27	April 15	Mo Meets the Puppets
28	April 22	Whaling
29	April 29	College Life
30	May 6	Native Women
31	May 13	Changing Face of Alaska

In June 1974, GOT learned (verbally) of NIE's decision to charge PBS for use of the NCC/Denver facilities in transmitting programming from Washington, D.C., which made the Interconnect system impossible, due to the unanticipated cost. There was no further development of the PBS/NPR Interconnect programming.

In September, when system testing of the ALED ATS-6 network began, it was discovered that the two Alaska S-band downlink channels could not be used simultaneously, making the PBS/NPR Interconnect technically impossible had it been developed.

EXPERIMENTS OF OPPORTUNITY

The Experiments of Opportunity program was designed to provide ATS-6 time for other state departments or organizations that wished to experiment with the utilization of satellite technology and programming. Although not an original project element, it was added when additional ATS-6 time became available to GOT (early 1974). It added no increased in project cost; use of GOT personnel in preparation and production was to be paid for by the participating agency.

In May 1974, GOT wrote to almost 100 state departments and organizations, inviting their participation in this experiment (Appendix H.36). In June GOT sent those that had positively responded further descriptions of experiment requirements, and an outline for submitting a program proposal (Appendix H.37). A number of proposals were submitted in June. In August, GOT accepted the proposal by the Alaska State Library (Appendix H.38), and tentatively accepted several others, while requesting more specific details. When no further response was received from these agencies, plans went no further.

Community Library Training

The Alaska State Library's proposal for 17 programs in Community Library Training continued through to production. The ATS-6 program broadcast, combined with regional training workshops and a correspondence course, served as the basis for a $45,000 Higher Education Act Title II-B training grant to reach thirty rural Alaskan community librarians without previous access to formal library education programs. (About 1/3 of the communities in this project were located in the ATS-6 footprint; the remainder were provided with video cassettes or audio tapes of all ATS-6 broadcasts.)

The content of this Community Library Training program was developed entirely by Alaska State Library personnel.

Politalk

Although originally one of the agencies contacted by GOT in May, the Alaska Department of Community and Regional Affairs did not submit a proposal for Experiments of Opportunity time until February 1975 (Appendix H.40). They requested, and were granted, one-half hour per week for a 15-program series on the legislature, how it operates, and current legislation and its impact. The program, designed by an independent contractor to the department, was to have a moderator responsible for specific program content, including interviews, both live and pre-recorded, comments on legislation, and slides of the legislature in operation. The total budget cost to the Department of Community and Regional Affairs for this program was $2,250.

Fish and Game Films

In late May 1974, in response to the GOT request for Experiments of Opportunity participation, the Alaska Department of Fish and Game submitted its request for 5 to 10 of the available one-half hour time blocks, to be used primarily to broadcast 16 mm movies.

With the number of proposals submitted and under consideration in May, GOT felt it preferable to allow time for proposals of a more experimental nature.

When additional time became available on Wednesdays (originally ECE time), GOT contacted the Department of Fish and Game in December about available films. Selection of films for ATS-6 broadcast was made jointly by the Department of Fish and Game and GOT, based on the status of television rights, time length, availability in Juneau and suitability of the film to the ALED audience.

This program material had been produced by the Department of Fish and Game, and its use resulted in no additional cost.

INTERACTION

Interaction was the most experimental component of program design. Planning for this segment of all programming centered on allowing maximum time for viewer reaction and input via the ATS-1 VHF link with broadcasting studios during program transmission.

Instructional Programming interaction was designed as a 10 to 15 minute segment to follow the 15 to 20 minute taped programs in Health Education, BOLD and ECE. With a host teacher on-camera, questions reinforcing each program's lessons were to be asked of viewers, who could then respond verbally over ATS-1 to the interaction teacher.

The teacher's manual for the BOLD series outlined a five day teaching sequence of classroom activities centered around each BOLD program. These detailed activities involving class participation and response served as the basic design for BOLD interaction. The Health Education teacher's manual, in less detailed form, also contained suggestions for classroom and interaction activities to accompany each program.

Interaction for Alaska Native Magazine and Teacher In-Service Training, as well as Experiments of Opportunity programming, was designed to occur throughout each program, either through village response to specific questions, or as the site audience asked questions of program guests or hosts.

IX. PROGRAM PRODUCTION

IX. PROGRAM PRODUCTION

The Governor's Office of Telecommunications entered into a contract agreement on March 18, 1974 with the University of Alaska, Division of Media Services (KUAC-TV) for specified ALED program production (Appendix A.5). The contract agreement for $650,223.83 called for KUAC to produce 32 programs in the ECE, BOLD, Health Education, TIST and Viewer-Defined Program series. This included set design and construction, hiring of all necessary production staff and talent, writers to complete finished scripts from NWREL designs, and Native language translators for ECE and Viewer-Defined Programming. Under this original contract, KUAC would also construct a video announce booth for interaction portions of all programming, and hire all necessary talent for interaction production.

This contract was revised July 23, 1974 (Appendix A.5.1). The revisions eliminated the need for a second (interaction) studio in Fairbanks, moving all Instructional Programming interaction production to the Juneau studio. Studio space and technical facilities for interaction for Alaska Native Magazine and TIST remained the responsibility of KUAC. To accommodate this change the KUAC contract was reduced by $34,500, providing funds for construction of the Juneau studio facilities.

Additional contract revisions increased the KUAC contract budget for puppet construction ($4,400) and for filming Alaska Native legend tellers ($4,848). With these changes, the revised KUAC production contract totalled $625,001.83. As specified in the July-revised contract, the National Institute of Education provided $583,355.51 of this amount, with the remaining $41,646.32 provided by the Corporation for Public Broadcasting (CPB).

Both the original and revised contracts required KUAC to provide writers for completing NWREL program designs as finished scripts. This provision was terminated as of July 15, 1974 by a contract modification, made on October 31, 1974 (Appendix A.5.2). This first modification was a funding decrease of $97,538, necessary due to the discontinuation of Early Childhood Education production, elimination of script writing responsibilities, and reduced NIE funding. One final contract modification in March 1975, increased KUAC's funding by $28,920 to allow completion of BOLD production.

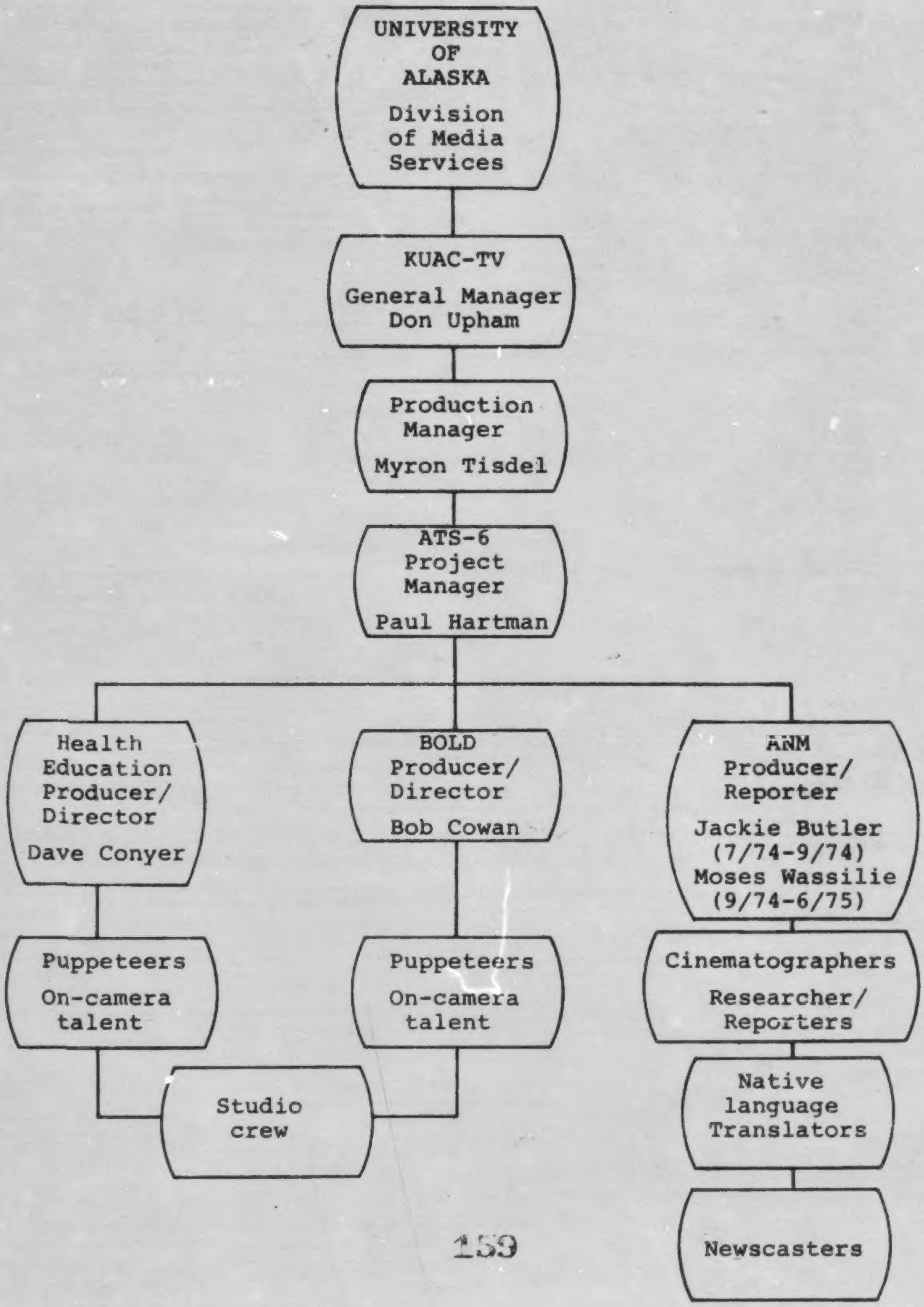
The ATS-6 staff at KUAC, supervised by KUAC-TV Production Manager Myron Tisdel, was hired beginning in May through October 1974, consisting of Project Manager Paul Hartman, BOLD Producer/Director Bob Cowan, Health Education Producer/Director David Conyer, ANM Producer/Reporter Jackie Butler (replaced in October by Moses Wassilie on staff as Writer/Reporter since August), ANM writers and researchers, technical studio crew and cinematographers, puppet operators, and on-camera talent. Figure 17 shows KUAC personnel and management responsibilities. Total program production costs are given in Appendix J.4.

INSTRUCTIONAL PROGRAMMING

Procedures for Instructional Programming production as detailed in the GOT/KUAC contract called for the producers to: "Consult with program designers to assure feasibility of program designs and accurate interpretation of program designs. In the event of disputes between NWREL and production components of this project, a decision shall be made by the GOT and its decision shall be final."

The working relationship between NWREL and KUAC on Instructional Programming production developed through a series of meetings and correspondence (both verbal and written) between the two agencies throughout 1974 and early 1975. Meetings, held

FIGURE 17. KUAC-TV MANAGEMENT AND PRODUCTION STAFF


UNIVERSITY OF ALASKA
Division of Media Services
KUAC-TV
General Manager Don Upham
Production Manager
Myron Tisdel
ATS-6 Project Manager
Paul Hartman
Health Education Producer/Director
Dave Conyer
BOLD Producer/Director
Bob Cowan
ANM Producer/Reporter
Jackie Butler (7/74-9/74)
Moses Wassilie (9/74-6/75)
Puppeteers
On-camera talent
Puppeteers
On-camera talent
Cinematographers
Researcher/Reporters
Studio crew
Native language Translators
Newscasters

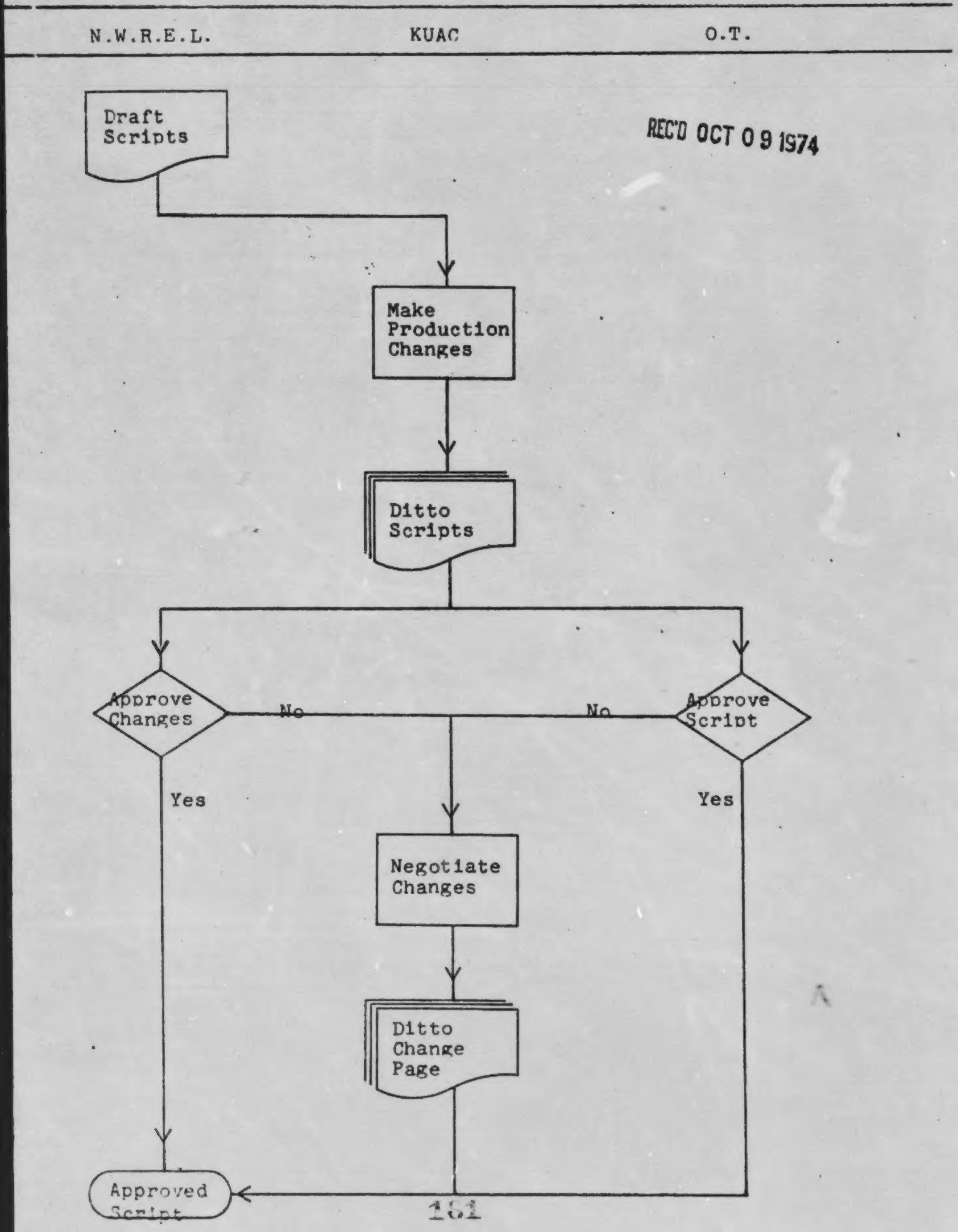
in Anchorage, Juneau and Fairbanks periodically, were attended by NWREL, KUAC, and GOT. While written record was not made of all of these meetings, they dealt with establishing coordinating procedures, working out problems encountered, and discussing details of both program production and design.

In June 1974, KUAC issued a Memorandum of Understanding to BOLD and Health Education designers, detailing agreements reached on production capabilities (number of puppets and voices, etc), given in Appendices I.1 and I.2.

The procedures established for final script approval prior to the start of program production are shown in Figure 18. This process called for NWREL to submit final drafts of scripts to KUAC, for any necessary production changes, Copies of the scripts, with KUAC's changes, were then forwarded to NWREL and GOT, for final approval. If the KUAC changes were not approved, negotiations between the three agencies continued until the scripts were given final approval, and ready for production. Based on final milestones prepared by GOT in July 1974, scheduling called for final, approved scripts to be received from NWREL by KUAC approximately one month prior to the scheduled production dates.

On June 27, 1974, KUAC finalized a subcontract with Joe Princiotta for design and construction of puppets for the three Instructional series (Appendix A.5.4). This agreement called for the construction of 12 puppets (each to be operated by one puppeteer) as well as puppeteer training, and puppet maintenance through the project, for a total of $14,440.

In meetings with the consumer committees, prior to contract signing, general puppet designs had been established (Figures 19-A, 19-B, and 19-C). (Although ECE


N.W.R.E.L.
KUAC
O.T.
Draft Scripts
Make Production Changes
Ditto Scripts
Approve Changes
No
No
Approve Script
Yes
Yes
Negotiate Changes
Ditto Change Page
Approved Script

REC'D OCT 09 1974

FIGURE 19-A. TORA, ROD-DOD AND ZEON

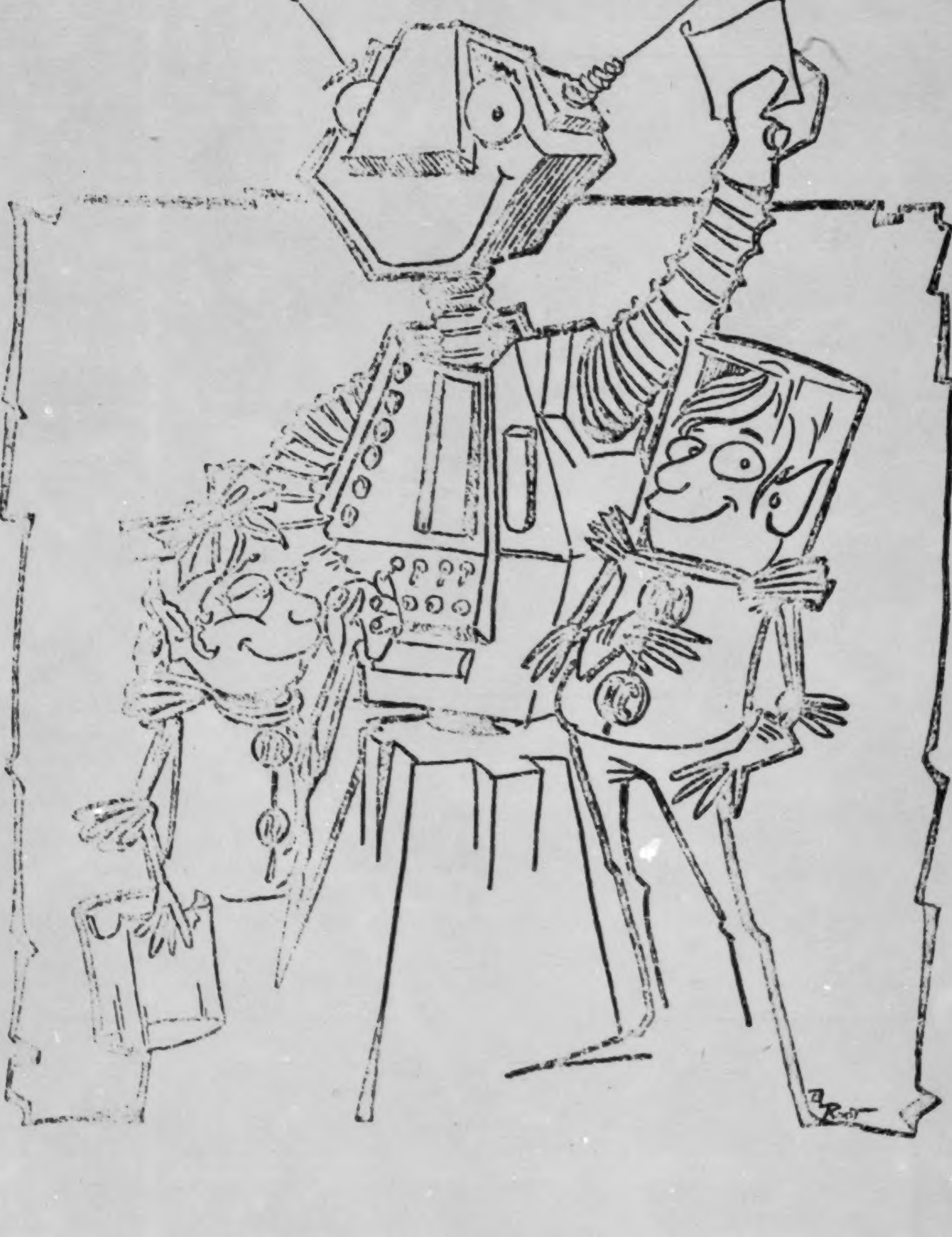


FIGURE 19-B. CHARLIE BEAVER, GERM AND REX MOOSE

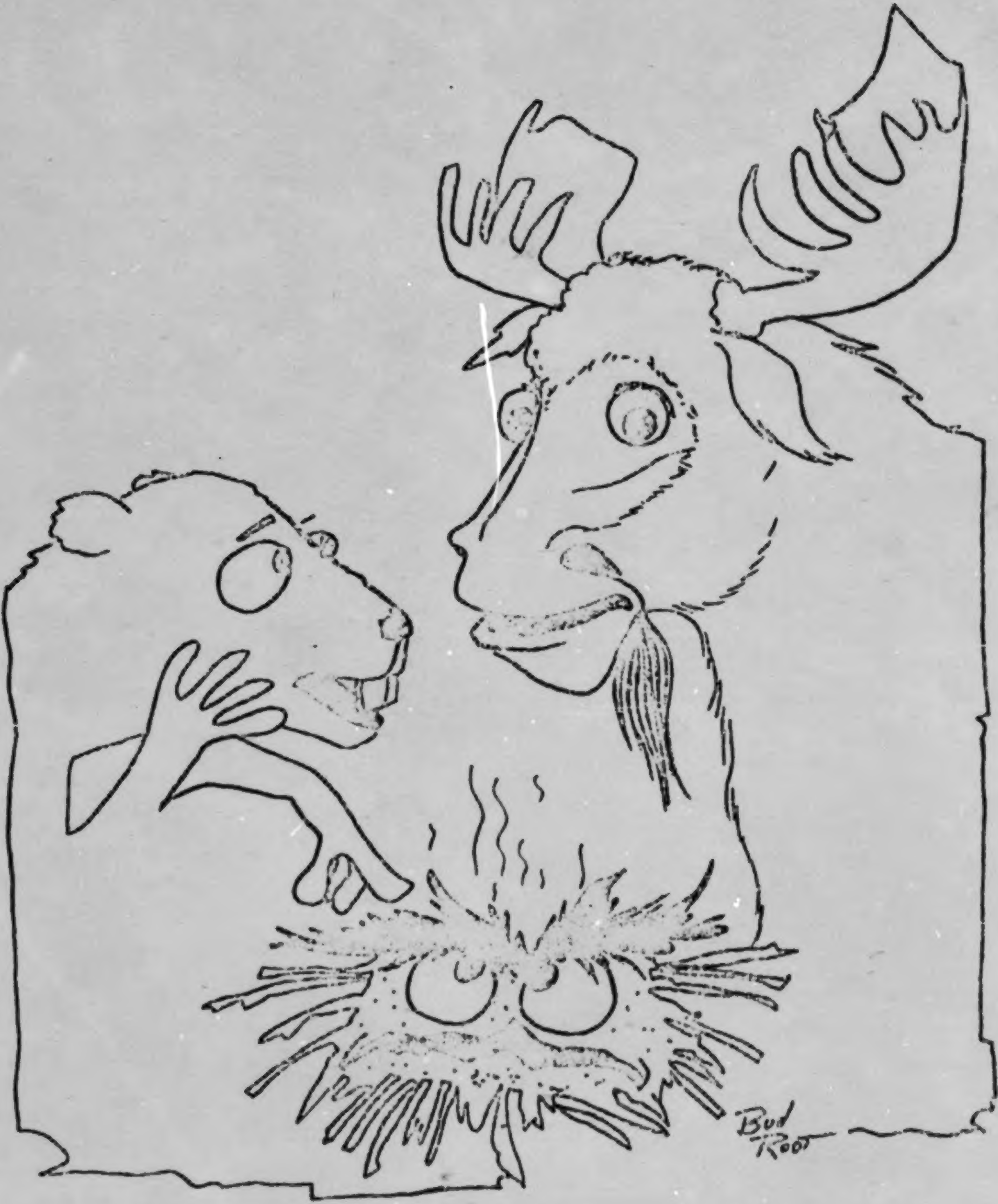
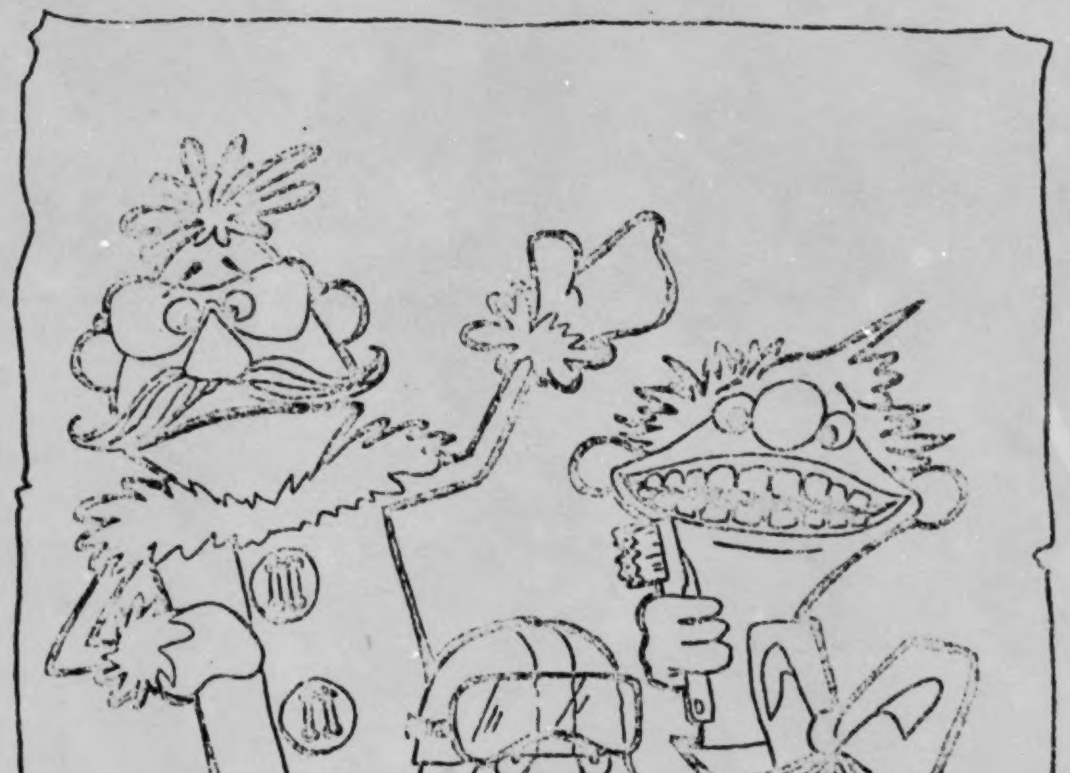


FIGURE 19-C. Various puppet video episode characters



was suspended, the puppets for this series were still to be constructed and delivered to KUAC.) With a deadline extension in mid-July, the puppets for Health were due July 23, BOLD by August 2, and ECE by August 30.

Early Childhood Education

On June 28, 1974 all production of the Early Childhood Education program series was suspended (Appendix I.3).

Health Education

Verbal and written negotiations between NWREL and KUAC on the number of characters and puppets for the Health Education series Right On! resulted in the written guidelines given in Appendix I.1. The specifications for characters of the series, as outlined in this document by KUAC, were: Millie the Health Aide, the human character; Rex Moose, puppet and voice; Charlie Beaver, puppet and voice; Germ, puppet and voice. In addition KUAC agreed to provide as many as four different voices for Puppet 1 or Puppet 2 in any single program, and requested the limit of four characters (human and/or puppet) on the set at any given time. This agreement eliminated one character from original designs, necessitating some design revision.

Right On! Producer/Director Dave Conyer was hired June 14, 1974.

Production of the series began in July, with set construction and casting completed. The set consisted of a "homey" health aide's office, with a wide rear window and a front counter, for puppet placement. Miniature sets were also constructed as required for the muppet sequences of each script. Casting required two puppeteers and a Native woman to play Millie.

By August 1 the puppets had been delivered, and puppeteer training was completed.

RIGHT ON!
Millie the Health Aid with Rex Moose
and Charlie Beaver.

The first program was produced in early August, re-taped later in the month, and the next two programs were taped by the end of August.

A field test of the series was held on August 27 at the Fairbanks Native Community Center. Eight children, aged 3-13, watched Programs #1 and #3 and answered questions asked by the program designer. An assessment of the field test by the program designer is given in Appendix I.5.

Four more productions were completed in September, three programs behind schedule due to the earlier delays. KUAC planned to continue a strict one-per-week production schedule for this series, to allow build up of a greater backlog of finished BOLD programs.

Although some of the earlier scripts were delivered by NWREL late, which cut down on production lead time, this was not a direct delay to production (GOT Bi-Weekly Report 9/28/74). KUAC felt it essential to provide the cast with final scripts a minimum of one week prior to production taping, which was generally possible for this program series.

At its September meeting, the Health Education consumer committee had its first opportunity to view the produced programs, and reactions were positive. The puppets met with approval, as did the characterization of the health aide, although it was felt that her delivery of lines could be improved. The committee also suggested that the pace of the programs be quickened, with shorter skits and more muppet segments, and that more music be used.

Orientation for the program was broadcast to all sites on September 27, continuing on October 4. Right On! Program #1 premiered October 7.

By October, script delivery was on schedule. Script revision procedures and KUAC-requested script changes generally resulted in several weeks delay between initial script submittal by NWREL and KUAC's receipt of a production-ready script. Although the series was still behind the production schedule, it was well ahead of the broadcast schedule. Since additional production time was needed for BOLD it was not necessary or possible for KUAC to regain the Health series milestones.

Production of the series remained behind the original schedule until its completion in early April. This last program was completed two weeks before its air date.

These originally-produced segments of Right On! were broadcast on Mondays. The Friday broadcast in the series was a canned health film chosen to reinforce the Monday health lesson, in a manner relevant to rural Alaskan 8-10 year olds.

Films were located and previewed by NWREL, with consumer committee approval of selections. The GOT Education Experiment Manager ordered all selected films. The distributors sent the films directly to KUAC, which made 2 copies and returned the originals. KUAC then broadcast each film as scheduled, supplying the Juneau interactio teacher with one copy to preview prior to broadcast. All copies of the films were then erased, since the films had been rented on a one-show basis (Appendix I.4.1).

All 64 Right On! programs were broadcast as scheduled, with the exception of the two canned films (#20 and 22) which GOT felt not to be suitable to the target audience Five programs were also scheduled to be shown on Wednesdays, to make up for programs not broadcast on holidays and keep the series on its broadcast schedule. The final Right On! broadcast was May 9, 1975.

The milestones of scheduled completion for Health Education production are shown in Table 27-A, for comparison with production completion milestones given in Table 27-B.

Basic Oral Language Development

The Memorandum of Understanding issued June 27, 1974 by KUAC to BOLD designers detailed the results of negotiations between the two agencies on talent specifications for the series Amy and the Astros (Appendix I.2). The featured characters included Amy, a human character; Tora, puppet and voice; Zeon, puppet and voice; Rod-Dod, puppet and voice; and Little Yellow Fellow, puppet only. In addition, KUAC provided three slapstick performers for scripted skits; limited to four the number of characters (human and/or puppet) on the set at any given time; and limited to three the number of puppets active in any given scene.

These details of production capabilities resulted in decreasing the originally planned Astro puppets from four to two, necessitating early script revisions. In setting these limitations, the KUAC Project Manager stated:

> I urge you to ask if you have any questions about our ability to produce effects and situations which you envision. I promise we will try. I hope you know that it was difficult to have to restrain you from using four Astro-kids, and in general to have to impose these kinds of limitations. Budget restrictions on creative people are a most unhappy fact of life.

Amy and the Astros Producer/Director Bob Cowan was hired June 21, 1974.

Pre-production preparation at KUAC continued until June 28, when notification was received from GOT to suspend all BOLD production (Appendix I.3). This was followed on July 8 by NIE-authorized continuation of BOLD set construction, not to exceed $1,000 (Appendix H.15).

AMY AND THE ASTROS
Amy with the Astro Kids and Rod Dod.

On this limited basis, set construction began in August. On August 23, GOT was (verbally) informed by NIE that BOLD would be funded fully. This go ahead was relayed (verbally) to KUAC by GOT by August 30 (Appendix H.18). On September 3, NIE (verbally) informed GOT of uncertain NIE funding affecting BOLD funding. With unofficial NIE assurances that BOLD would be funded if NIE received its funding, GOT made the administrative decision to proceed with full production of the BOLD series, to assure that broadcast schedules could be met (Appendix H.21).

Casting of Amy and the three puppeteers was completed by early September.

Set construction encountered problems that delayed its completion until September 20. In a letter to GOT (6/3/75), the KUAC Project Manager detailed the difficulties

> There were two problems with our set which could have been alleviated had we had an uninterrupted funding situation. One was caused by our choice of metallic covering for the set, which we gambled on in hopes it would really make a convincing-looking space ship interior. The gamble was lost since it reflected light so badly and also formed bubbles due to the humidity problems here in Fairbanks. The second was a problem with getting good camera angles when the puppets were placed along the counter which had been originally intended as their "base of operations." This was solved by utilizing them at the front table almost exclusively. It is unfortunate that we didn't have just one month more 'solid' lead time to produce a program, pilot it, and make corrections in characterizations, set, scripts, etc., all before commencing production in earnest.

The BOLD series also encountered delays in puppet delivery. All puppets for the series were delivered by mid-September, over one month behind schedule. Puppeteer training was accomplished by September 18. During this time period, the puppet designer requested that his name be removed from all BOLD program credits, due to his dissatisfaction with the series. KUAC complied.

KUAC received the first six final scripts from NWREL in late August. Four of these were reclaimed by NWREL for revision in early September, which did not directly delay production, but cut the already limited amount of pre-production lead time available. NWREL, in September, offered the Producer/Director written details on BOLD production that the two agencies had previously discussed (Appendix I.6).

Production of the first two BOLD programs was begun September 20, with completion of set and puppets. The first two programs (including re-taping of Program #1) were completed one week before scheduled broadcast start.

The field test for BOLD, originally planned for September, was postponed several times during this period, but was never accomplished. This was due principally to the tight production schedule and delays on BOLD, involving all personnel in the priority of preparing the series for on-schedule broadcast. Orientation broadcasts for the series occurred September 27 and October 4. BOLD Program #1 premiered October 7.

At the final BOLD consumer committee meeting October 31 - November 1, members voiced dissatisfaction with the series on a number of grounds (minutes in Appendix H.23).

The committee was disappointed in the quality of the puppets, which they felt differed considerably from their design; the puppets looked "old and ugly rather than cute and space-like" as the committee approved designs had called for. The puppets did not have removable space helmets, the space suits looked like pajamas, and the committee could distinguish little or no difference between the girl or boy, either visually or in characterization. The puppet designer agreed to make changes requested by the committee, which produced a detailed list.

The committee also suggested that music accompaniment to songs be added, and that programs should have a more specific storyline with more (slapstick) interludes. There was also concern that the program lacked "warmth" in character interaction, and that words were too deliberately, not naturally, pronounced.

KUAC was also not satisfied with the lack of characterization between the two Astro puppets, and what it felt to be a lack of story line giving the show an unacceptable degree of dramatic direction. KUAC felt these problems to be attributable to the program scripts. Specific problems encountered during the early phases of production also included incomplete specification sheets supplied by NWREL with scripts (detailing special props, slides, etc.), and scripts calling for puppet action that was beyond their design possibilities (picking up items, blinking eyes, frowning, increased mobility, etc.).

On November 13, the KUAC Project Manager wrote to GOT's Experiment Coordinator withdrawing credit from BOLD due to KUAC's difficulties with scripts. In GOT's view, this action came without previous indication of the serious degree of KUAC's dissatisfactions. After discussion with GOT, KUAC agreed to recall the letter and work out the problems. While this letter brought KUAC's dissatisfactions to light, it also set a tone for confronting the BOLD problems that was not conducive to establishing a cooperative working relationship with the program designers.

The pattern, which seemed to persist, was for KUAC to build an in-house sense of frustration over script revisions, centered around the designer's lack of television production experience and inconsistent consultation regarding production capabilities. The difficulty of performing the revisions KUAC felt necessary for scripts within the time available was expressed in memos from the Producer/Director to the Project Manager rather than directly to the program designer. This involved the Project Manager in communicating these difficulties to GOT, which then necessitated GOT's coordination of meetings between the two agencies to straighten out the problems.

While consistent communications existed for the Health series, it was lacking in BOLD development, and contributed extensively to the production difficulties. GOT coordinated a series of meetings throughout the fall and winter of 1974, to help maximize communication and understanding between NWREL designers and KUAC producers. It was the GOT Education Experiment Manager's observation that in face-to-face meetings, problems were dealt with and resolved. But when production work resumed in Fairbanks and design work resumed in Anchorage, problems again arose that required GOT's involvement in continued negotiations.

The two Instructional Programs were quite different in design, but comparison can be made in light of the problems encountered. Right On! centered each program on one health topic, developing a minor problem for the puppets, the resolution of which clearly taught a specific health principle. The muppet segments were varied, humorous and fast-paced, allowing flexible creativity in production.

The concept and design of the BOLD series was quite different. In the teaching of language, the program design concentrated on a systematic, repetitive approach.

The originally quite limited vocabulary expanded only as new words were introduced. Each program incorporated a number of songs as a teaching method. Scripting around these requirements left minimal time for development or expansion of a story line (conflict/resolution). The main human character, Amy, was essentially a teacher of language, using songs and repetition as direct learning tools. (See NWREL's policy position on BOLD, 11/25/74, Appendix I.7.)

Design was committed to teaching language. Production was committed to producing an acceptably dramatic program to interest viewers, while the language was being taught. GOT felt that the differences in approach to the program series by design and production significantly contributed to communications difficulties between the two agencies.

Communications were further, consistently, hampered by time limitations: "Needless to say, the BOLD portion of the project has had considerable difficulties stemming from a severe time shortage imposed by the late funding." (Memo from Cowan to Hartman 11/74.)

While negotiations or changes were being made on future scripts, production was also in process to meet broadcast air dates. GOT felt this pressure to be a frustrating contributor to communication on BOLD, with both designers and producers required to perform a large amount of work, requiring close coordination, in a very short time period. The process of turning the detailed concepts of teaching English as a second language into scripts and finished programs required extensive effort, more so than any other ALED program. Yet from the initial funding delays through to production the demands of this coordination had to be consistently placed in the framework of deadlines and tight time limits.

The problems culminated over the script for program #16, which the BOLD Producer/Director felt to require "numerous corrective measures" before it could be produced (memo from Cowan to Hartman 12/24/74). Negotiations, coordinated by GOT, resulted in a script acceptable both to NWREL and KUAC.

The production problems eased somewhat beginning with script #21, attributable to both increased communication between the agencies and an easing of production pressures. The Producer/Director of BOLD found these later scripts to be "flowing more, more readable." A dream sequence scripted for program #26, a special effects segment particularly pleasing to KUAC, which allowed production creativity, was developed in "consultation with the station prior to the writing of the script to brainstorm the effects possible and the interrelation with the story line." (Memo from Cowan to Hartman 1/2/75.)

Script delivery was on schedule by mid-October although revisions delayed KUAC's receipt of final approved scripts ready for production. Throughout production, KUAC held to a tight schedule, attempting to produce more than one program per week. This was not always possible in the early months of production: "The milestone schedule was too optimistic in anticipating our being able to produce two programs in each of the last three weeks: thus we are now 5 programs behind. With set problems basically behind us, we do hope to step up production." (GOT Bi-Weekly Report 11/16/74.)

Scripts 13 through 20, although originally received by KUAC in November, were revised by NWREL and completed in December. With these scripts returned, production proceeded with the capacity to produce two shows per week. KUAC attempted to provide all cast members with final scripts a minimum of one week before production taping, which was generally possible for this program series.

Due to KUAC's increased efforts to meet the schedule, by mid-January production was only two weeks behind. Despite being behind schedule, with the exception of the first few programs, production was generally at least one month ahead of air date.

The changes requested by the consumer committee for the puppets were accomplished by the puppet designer for the final month of programming.

All 32 Amy and the Astros programs were broadcast as scheduled on Mondays, with repeat on Fridays. Twice to accommodate holidays, the Friday repeat was eliminated to keep the series on schedule. The final BOLD broadcast was May 12, 1975.

The milestones of scheduled production are given in Table 28-A, for comparison with accomplished milestones shown in Table 28-B.

Teacher In-Service Training

The production of the Teacher In-Service Training program was performed in Juneau by GOT personnel. Production of this series differed greatly from original plans.

The DOE TIST producer had specified that the program consist of a pre-packaged training series, teacher-produced programs, and workshop programs centering on problems submitted by the viewing teachers via interaction.

The first TIST program was produced in September, based on the DOE program plan (pre-taped Dreikurs series). Broadcasting began on October 10. With broadcast of the first few programs, feedback via interaction indicated strongly that the pre-packaged series was not of interest to its audience. Interaction was never used, either frequently or consistently, by more than a few of the teachers. Only one teacher-produced program was aired, a slide presentation that had not been made specifically for TIST.

These factors resulted in major planning revisions in the fall of 1974. To complete the series, a working relationship was established between the DOE, GOT Technical Director and the volunteer on-camera hostess. With weekly meetings several weeks in advance of air time, these personnel planned revised programming for the series. Several programs were based on teacher interaction requests, with the remainder centering around panel discussions and interviews of teachers involved in innovative educational projects. Interaction participation remained minimal.

All production was performed by GOT studio personnel. In addition, the DOE paid the GOT staff member who effectively organized, produced and directed all programs. DOE's expenses for both program design and production totaled $11,000. (A list of all program topics is given in Appendix I.8.)

This series, titled Tell and Show, premiered October 10, 1974 and was broadcast every Thursday, with the exception of holidays, through May 8, 1975. Only 28 programs were broadcast. The milestones of scheduled production for TIST are given in Table 29-A, for comparison with accomplished milestones shown in Table 29-B.

Interaction

The interaction portion of programming was originally designed (in early 1974) to be produced in Fairbanks, under GOT's production contract to KUAC (Appendix A.5), by means of a specially constructed video announce booth.

As program design planning proceeded through the spring and fall of 1974, the decision was made by GOT to transfer Instructional Programming interaction production to the Juneau studio. The KUAC revised contract in late July (Appendix A.5.1) eliminated the video announce booth from the Fairbanks production requirements. (TIST interaction, while designed principally to occur in Juneau where the main office of DOE was located, remained in the KUAC contract in the event that DOE wished to utilize resources at the University of Alaska.)

The GOT/Juneau production studio personnel, with primary responsibility for interaction production, consisted of a Program Assistant, a Technical Director, and two part-time camerapersons. In addition, two on-camera interaction teachers for the BOLD and Health Education series were hired in September 1974 by GOT.

In preparation for the interaction broadcasts, the two on-camera teachers spent a week at the NWREL office in Anchorage in September to familiarize themselves with program designs.

Both interaction teachers wrote their own scripts for interaction, based on program designs and suggested activity included in the Teacher's Manuals. While the BOLD interaction design was more detailed, requiring less original material from the interaction teacher, the Health Education interaction design required extensive original scripting by the interaction teacher.

All graphics were supplied by GOT studio personnel. After program broadcast had begun, requests were made for drawings by viewing school children, and these were used consistently for both programs. Actual production time for each 10-15 minute interaction segment averaged 2 to 3 hours.

The production of interaction took far more GOT time in planning, preparation and production than anticipated due to the expected higher level of utilization. Originall GOT planned for interaction teachers to act basically as telephone operators, coordinatin incoming calls. Due to the limited use of interaction from sites, GOT had to design interaction as programs in themselves, competing with Instructional Programming productions for viewer attention. An added difficulty was the lack of formal television experien of both interaction teachers.

The Health Education interaction required the greatest amount of planning effort by GOT studio personnel. Viewer reaction (and lack of it) caused several changes in the format of interaction for this series. Initial GOT scripting encouraged viewers to ask questions, and provided material for presentation if no questions were asked. This evolved into the full interaction time being used for presentation of material, with specific questions being asked by the interaction teachers, with questions from sites taking priority over presentations.

This in turn evolved into a more directive and prepared format, similar to the designed BOLD interaction, asking specific sites specific questions, which proved to be the most effective method of eliciting site response. This format was used in BOLD interaction from the beginning of production and proved to be the more successful method of utilizing interaction.

Throughout ALED interaction broadcasts, site initiated questions were sporadic. Germs were a subject of consistent viewer interest, attributable to the volatile and flamboyant germ puppet on Right On! that made a strong impression on the student audience.

Full utilization of interaction was hampered throughout the ALED project by interference over the VHF network by medical experiment use, ATS-3 users and miscellaneous transmissions. A minimum of 25% of interaction broadcasts were inflicted to some degree by interference. NCC/Denver consistently interferred by transmitting to Alaska over ATS-1 during interaction, apparently without monitoring ATS-1 use prior to transmitting. The poor quality audio circuit in Alaska also made many interaction transmissions from both the sites and the Fairbanks and Juneau studios difficult to understand.

Through the course of the ALED project, interaction with sites increased, and productions became smoother. The basically trial-and-error method of eliciting site responses indicated clearly that more response was received when sites were asked specific questions, and this format was consistently followed.

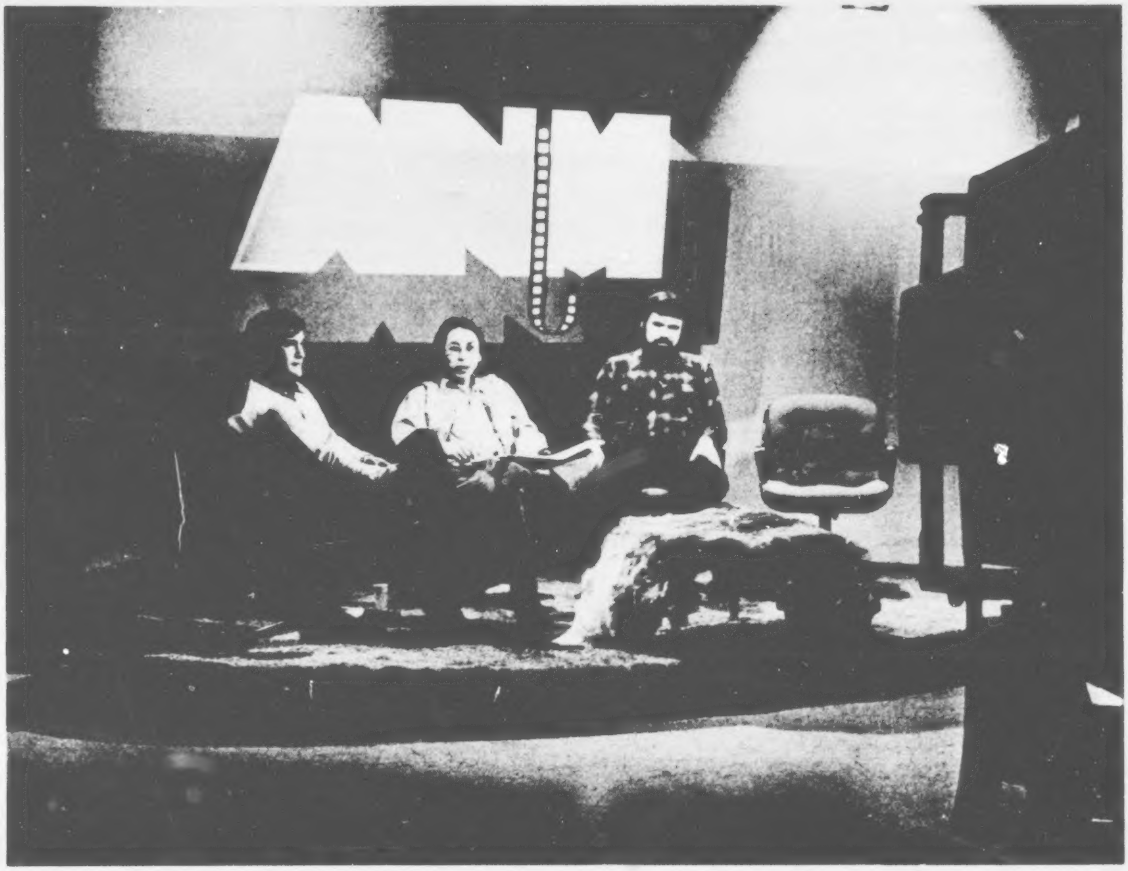
TIST programming, revised and produced by GOT studio personnel, incorporated in all programs encouragement from the on-camera hostess for viewer questions and reactions. Programs centered on panel discussions or interviews with educators, but site response and use of interaction was sporadic and remained sparse throughout the series.

VIEWER-DEFINED PROGRAMMING

Alaska Native Magazine

Production effort for Alaska Native Magazine began with KUAC's hiring of staff to produce the program series. With ANM consumer committee recommendations, KUAC hired Jackie Butler as Producer/Reporter on July 25, 1974. Moses Wassilie was hired as Writer/Researcher and Audio-Visual Technician (two half-time jobs) on August 1. On September 1, Wassilie became a full-time Writer/Researcher for the series, and

ALASKA NATIVE MAGAZINE
Series host Moses Wassilie with two guests.



moved to the Producer/Reporter position on October 4, following Butler's resignation.

Two cinematographers were hired for this series, Mark Badger (part-time) on July 3, and Richard Kahn (full-time) on October 8. In October Molly McCammon and Kris Lentsch were each hired as part-time Writers/Researchers. Newscaster Bonnie Adams was hired in October, and replaced by Marilyn Richards in December.

The only major change in scheduled production of this series was made in August by KUAC. The decision was reached to require scripts for the programs to be completed the Saturday before the Tuesday evening live broadcasts, rather than further in advance. (See Table 26-A, Viewer-Defined Programming Milestone Schedule.)

A publicity pamphlet on the series was prepared by the production staff in September, with consumer committee approval (Appendix I.9).

In the production of this series, the ANM staff worked closely with the consumer committee responsible for program topic selection. Coordinated through the GOT Utilization Manager, the ANM consumer committee met in July, August, October, November and December of 1974, and in February and March of 1975. Each of these meetings resulted in the continuing selection of topics for subsequent Alaska Native Magazine programs (see PROGRAM DESIGN/Viewer-Defined Programming, Tables 24-A, 24-B, 24-C, and 25).

Once the general topics were selected by the committee, the production staff prepared a general program outline, and began gathering raw material (film footage, potential guests and profile interviews) to be edited and assembled, with a specific script developed just prior to the live broadcast each week. Newscasts were compiled from AP news, a wide variety of regional Alaskan newspapers, as well as via interaction with villagers once broadcast had begun.

The consumer committee contributed viewer reactions and suggestions to improve program production and guidelines to ANM staff, in addition to its topic selection These committee guidelines consistently stressed the avoidance of "bureaucratic" language, and an overly "slick" studio approach to the program. The committee felt that the programs should show what can be done, not just what is happening, that a positive rather than negative approach should be used.

The committee also requested that ANM staff notify the committee if substantive changes in topic development were made, and stressed that film crews go into villages with a flexible attitude about how the program topics should be treated. In addition, the committee felt that profiles of residents should include the "common" people, not only the "successful" (Appendices H.29 and H.30).

Filming on location began in early August, and continued through April, to provide footage for each program, covering a wide variety of committee-selected topics. At the instruction of the committee, these segments were not scripted or planned in advance, to allow filming to accommodate to on-location experiences.

This filming of people, events and villages was accomplished during the more than 20 field trips by ANM crew to Minto, Sleetmute, Juneau, Sitka, Galena, Tanana, Allakaket, Anchorage, McGrath, Aniak, Chuathbaluk, Petersburg, Bethel, Valdez, Barrow, Nome, Talkeetna, and Angoon.

KUAC production responsibility for ANM also included the hiring of Koyukon, Yupik and Thlinget translators. An orientation meeting for the translators was held in Fairbanks September 20. Translation of all taped or filmed material, as well as scripted news, was broadcast simultaneously with English over ATS-6 audio channels with most ANM programs. Each terminal site then chose which audio channel to listen to during program broadcast.

Despite KUAC's efforts, a Thlinget translator could not be located in Fairbanks, which is over 1,000 miles from the Thlinget-speaking areas of southeast Alaska. KUAC's budget could not afford to pay for a Southeast Thlinget to travel to Fairbanks to translate programs, so Thlinget translations were never broadcast with the series.

Assembly of the first program began in August and continued through to the first broadcast on October 8. Program assembly throughout series production began approximately two months prior to scheduled broadcast, and continued until each script was finalized preceding each broadcast.

ANM's orientation broadcast was transmitted over ATS-6 on September 24.

Continuing to meet after program broadcast had begun, the consumer committee contributed reactions and suggestions to improve program production. At the committee meeting in October the day after Program #1 premiered, the committee suggested that filmed segments should be spaced throughout the show, that each program be statewide rather than localized, using different areas as examples of each topic, and that controversy should not be avoided (Appendix H.31).

The November meeting's comments suggested that programs include previews or indications of future program topics, preferably for the entire coming month, and that people be encouraged to write questions, comments and suggestions to KUAC (Appendix H.32).

With the limited amount of interaction during the show providing limited viewer suggestions for future programs, the consumer committee at its meeting in December authorized three experimental programs suggested by ANM staff. For these programs, the film crew was to travel to villages and ask villagers what they would like to see discussed on television, then film according to comments received. (This effort resulted in Programs #14, 19 and 22.) Discussion at this meeting also centered on the interaction difficulties, and the need for more advance publicity on programming (Appendix H.33).

Prior to the December meeting, 12 topics had been selected from the lengthy list developed at the first meeting. On December 12, KUAC requested that the GOT Utilization Manager have the committee select 14 future program topics at its December meeting, to enable KUAC production to procede on schedule.

The Utilization Manager felt that this would rush the committee's decisions, and that more time was needed. In November he had instructed ANM staff to gather program material from the committee's list of topics yet to be specifically selected, on the understanding that all future programs would be chosen from this initial list (Appendix G.8).

The deadlines necessary for ANM production were here encountering the slower paced Native approach to decision making. An added contributor to the time problems was the make-up of the ANM committee itself. Most members were urban Native corporation executives, with busy schedules. They did not always have time or access to view the ANM broadcasts, making it necessary to review previous programs at committee meetings before further decisions could be made.

While sincerely interested in providing good input for the program series, the consumer committee members did not watch ANM and did not live in the villages. Input from villagers during film crew site visits was frequently the most direct viewer feedback to the staff, and provided much of the direction for on-location filming.

The December meeting resulted in the selection of 7 future program topics (Appendix H.33). In a meeting with GOT and KUAC personnel in January, the problem was further discussed. The concensus reached at that time was to not pressure the committee with production deadlines, and allow what the committee felt to be necessary time for topic selection. KUAC also expressed its desire that future problems be discussed directly with the producers, to avoid misunderstandings.

The February meeting lacked a quorum, and no program decisions could be made.

Four utilization aides were invited to attend the final March meeting of the ANM consumer committee, and provided some diverse and specific viewer reaction. Comments included the fact that attendance had dropped in some communities due to competition with other events on Tuesday evenings, people were tired of interviews and wanted more local filming, thought the studio set too formal, and sometimes had trouble following fast-paced English interviews.

The problems of interaction were discussed, specifically that the guests moved on too quickly to other subjects before the people had time to ask questions; people didn't like pressing the button to talk with the studio; some teachers inhibited villagers from responding; and the technology of the talk-back system prevented villagers from hearing their own questions. Suggestions for improving interaction were that the host repeat the questions, and prepare sites to answer questions before they were asked (possibly before or at the start of each show).

In a report on the series in February, the Producer/Reporter expressed his experiences with interaction difficulties: "...It's hard to push interaction with people that aren't traditionally too vocal about processes of change they don't understand... and hitting them with 'heavy' subjects, via satellite, one time only!...Participation over the satellite by rural Natives will be minimal unless they are given the time to experience its potential..."

At this final meeting the ANM staff was released from having to cover one subject in each program, to allow for more of the variety viewers were requesting (Appendix H.3

With the utilization aides present to give their point of view at this meeting, much more direct feedback on viewer reaction was possible. All agreed with the observation of the GOT Utilization Manager that village aides should be included as consumer committee members in the future to ensure good feedback and decision-making based on viewer reaction to programs.

Throughout the production of ANM, the staff made efforts to follow the guidelines and suggestions offered by the consumer committee. These efforts included experimentation with interaction, requesting viewer reactions and suggestions in writing, varying the methods of calling for interaction, asking questions for the sites to consider before interaction was called for, etc. The ANM staff complied with the committee's recommendation that more film segments be used: in the first two months of broadcast, the programs contained an average of 15 minutes of filmed or videotaped footage; during the last two months of the series, the average was 41 minutes per program. (Appendix I.10 provides a description of guests, profiles, and length of news and filmed segments for each ANM program.)

The time limits imposed by the demands of preparing each program for its scheduled broadcast made advance publicity a continuing problem. With the film crew's travel plans often made on short notice, villages were not always notified in advance. This offended some, who would have liked to participate and contribute had they been prepared to do so. Printed schedules of upcoming programs were generally prepared a month or more in advance by KUAC, but were not always distributed to all sites. The GOT Utilization Manager did distribute schedules to the utilization aides when he received them from KUAC, but this effort was not consistently accomplished until after December. The utilization aide's distribution or announcement of upcoming programs was not consistent at all sites, even when printed advance schedules were provided.

Time limitations were a continuing factor in series production, as expressed by the Producer/Reporter in a February report:

> In Alaska Native Magazine, we try to condense research done on one subject into an hour's program, while trying to bridge the gaps that exist between rural and urban Alaska, and Natives and non-Natives. One thing that we have been lacking since the beginning of this project was TIME...not only to generate a good understanding of satellites and what they can do, but to excel in the filming and production of the show. Sixty minutes per week of thirty-two weeks of a "Live" show is just not enough time to cover everything that needs to be included in the topics that are chosen...The pressure to "produce" has caused problems and mistakes made that could be straightened out if we are given time and a chance to correct them.

Of the total of 31 ANM programs, all but one were broadcast as scheduled on Tuesday evenings. (Program #15 was a 90-minute presentation of Alaska Governor Hammond's State of the State Address. The final ANM program, "The Changing Face of Alaska," was also 90 minutes.) The one exception to the ANM broadcast schedule being fully met occurred on February 11 with Program #18. Due to the cold weather in Fairbanks (-70 degrees F), the S-band transmitter could not be turned on and the program could not be transmitted to the ATS-6 satellite. The show was broadcast by KUAC-TV to the local Fairbanks area. GOT requested from NASA, and was granted, an additional hour on Thursday, March 27, to rebroadcast ANM Program #18.

Only 31 programs were broadcast in this series due to the technically delayed start date, and the dropping of the New Year's Eve broadcast.

The production milestones scheduled for Viewer-Defined Programming are given in Table 26-A. Production completion milestones are shown in Table 26-B.

KUAC finalized contract negotiations with GOT in July 1975, for editing ANM programs and the compiled film footage into 13 half-hour feature programs (Appendix A.9.4). This agreement, from June 13, 1975 through August 29, 1975, provided KUAC with $29,991 funding from CPB (Appendix A.9.3).

KUAC planned to broadcast this series beginning in the late fall of 1975, and to make the tapes available to interested public television stations.

EXPERIMENTS OF OPPORTUNITY

Community Library Training

Production for the Community Library Training program was performed by GOT production staff. The Alaska State Library provided all materials and on-camera

TABLE 26-A. VIEWER-DEFINED PROGRAM MILESTONE SCHEDULE

7/20/74

WEEK ENDING	6/8	6/15	6/22	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17
CONSUMER COMMITTEE					△					△	
FEEDBACK											
DESIGN										1-6	
SCRIPT									1	2-3	4-5
FIELD REPORTING AND INVESTIGATION											
PRODUCTION AND ASSEMBLY											1
BROADCAST AND INTERACTION											
DELIVERY OF EVALUATION DESIGNS AND REPORTS											

WEEK ENDING	8/24	8/31	9/7	9/14	9/21	9/28	10/5	10/12	10/19	10/26
CONSUMER COMMITTEE		△				△			△	
FEEDBACK						1	2	3	4	5
DESIGN						7-9			10-12	
SCRIPT		6	7		8	9	10	11	12	13
FIELD REPORTING AND INVESTIGATION										
PRODUCTION AND ASSEMBLY	2	3	4	5-6		7	8	9	10	11
BROADCAST AND INTERACTION						1	2	3	4	5
DELIVERY OF EVALUATION DESIGNS AND REPORTS	△		△							

WEEK ENDING	11/2	11/9	11/16	11/23	11/30	12/7	12/14	12/21	12/28	1/4
CONSUMER COMMITTEE			△				△			
FEEDBACK	6	7	8	9	10	11	12	13		
DESIGN			13-15				16-18			
SCRIPT	14	15	16	17	18	19	20	21		
FIELD REPORTING AND INVESTIGATION										
PRODUCTION AND ASSEMBLY	12	13	14	15	16	17	18	19		
BROADCAST AND INTERACTION	6	7	8	9	10	11	12	13		
DELIVERY OF EVALUATION DESIGNS AND REPORTS						△				

WEEK ENDING	1/11	1/18	1/25	2/1	2/8	2/15	2/22	3/1	3/8	3/15
CONSUMER COMMITTEE	△				△				△	
FEEDBACK	14	15	16	17	18	19	20	21	22	23
DESIGN	19-21				22-24				25-27	
SCRIPT	22	23	24	25	26	27	28	29	30	31
FIELD REPORTING AND INVESTIGATION										
PRODUCTION AND ASSEMBLY	20	21	22	23	24	25	26	27	28	29
BROADCAST AND INTERACTION	14	15	16	17	18	19	20	21	22	23
DELIVERY OF EVALUATION DESIGNS AND REPORTS										

WEEK ENDING	3/22	3/29	4/5	4/12	4/19	4/26	5/3	5/10	5/17	5/24
CONSUMER COMMITTEE			△				△			
FEEDBACK	24	25	26	27	28	29	30	31	32	
DESIGN			28-32							
SCRIPT	32									
FIELD REPORTING AND INVESTIGATION										
PRODUCTION AND ASSEMBLY	30	31	32							
BROADCAST AND INTERACTION	24	25	26	27	28	29	30	31	32	
DELIVERY OF EVALUATION DESIGNS AND REPORTS			△							

WEEK ENDING	5/31	6/7	6/14	6/21	6/28	7/5
CONSUMER COMMITTEE						
FEEDBACK						
DESIGN						
SCRIPT						
FIELD REPORTING AND INVESTIGATION						
PRODUCTION AND ASSEMBLY						
BROADCAST AND INTERACTION						
DELIVERY OF EVALUATION DESIGNS AND REPORTS						△

*Evaluation final report due 7/31/75

TABLE 26-B. VIEWER-DEFINED PROGRAMMING COMPLETION MILESTONES

6/30/75

WEEK ENDING	6/8	6/15	6/22	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31	9/7	9/14	9/21	9/28	10/5	10/12
CONSUMER COMMITTEE					▲						▲								▲
FEEDBACK																			1
DESIGN											1-6								7-9
SCRIPT																		1	2
FIELD REPORTING & INVESTIGATION									▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
PRODUCTION & ASSEMBLY											1	2	3	4	5-6		7	8	9
BROADCAST & INTERACTION *																			1

WEEK ENDING	10/19	10/26	11/2	11/9	11/16	11/23	11/30	12/7	12/14	12/21	12/28	1/4	1/11	1/18	1/25	2/1	2/8	2/15	2/22
CONSUMER COMMITTEE					▲					▲									▲
FEEDBACK	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19
DESIGN			10-12		13-15				16-18				19-21			22-24			
SCRIPT	3-4	5-6	7	8	9	10	11	12	13	14			15	16	17	18	19	20	21
FIELD REPORTING & INVESTIGATION	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
PRODUCTION & ASSEMBLY	10	11	12	13	14	15	16	17	18	19			20	21	22	23	24	25	26
BROADCAST & INTERACTION *	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18**	19

WEEK ENDING	3/1	3/8	3/15	3/22	3/29	4/5	4/12	4/19	4/26	5/3	5/10	5/17	5/24	5/31	6/7	6/14	6/21	6/28	7/5
CONSUMER COMMITTEE			▲																
FEEDBACK	20	21	22	23	24	25	26	27	28	29	30	31							
DESIGN			25-27			28-32													
SCRIPT	22	23	24	25	26	27	28	29	30	31									
FIELD REPORTING & INVESTIGATION	▨	▨	▨	▨	▨														
PRODUCTION & ASSEMBLY	27	28	29	30	31														
BROADCAST & INTERACTION *	20	21	22	23	24-18	25	26	27	28	29	30	31							

* Only 31 programs broadcast

** Not broadcast due to transmitter failure

TABLE 27-A. HEALTH EDUCATION MILESTONE SCHEDULE

7/20/74

WEEK ENDING	CONSUMER COMMITTEE	DESIGN*	SCRIPT*	PUPPETS	CASTING	SET CONSTRUCTION	CANNED MATERIALS*	PRODUCTION AND ASSEMBLY*	FIELD TEST	TEACHER ORIENTATION	SUPPLEMENTARY MATERIALS	BROADCAST	DELIVERY OF EVALUATION DESIGNS AND REPORTS
6/8	▲	1-7											
6/15													
6/22		9-15											
6/29													
7/6		17-23											
7/13				▲									
7/20		25-31	1-7		△								
7/27						△	2-32						
8/3			9-11					1					
8/10								3	△				
8/17			13-15					5			1-32		
8/24								7					△
8/31			17-19					9					
9/7	△							11					△
9/14			21-23					13		△			
9/21								15				1-2	
9/28			25-27					17				3-4	
10/5								19				5-6	
10/12	△		29-31					21				7-8	
10/19								23				9-10	
10/26		33-35						25				11-12	
11/2								27				13-14	
11/9		37-39						29				15-16	
11/16								31				17-18	
11/23		41-43	33-35					33				19-20	
11/30							34-64					21	
12/7		45-47	37-39					35				22-24	△
12/14								37				25-26	
12/21		49-51	41-43					39			33-64	27-28	
12/28													
1/4												29	
1/11		53-55	45-47					41				30-31	
1/18								43				32-33	
1/25		57-59	49-51					45				34-35	
2/1								47				36	
2/8		61-63	53-55					49				37-38	
2/15								51				39-40	
2/22			57-59					53				41-42	
3/1								55				43-44	
3/8			61-63					57				45	
3/15								59				46-47	
3/22								61				48-49	
3/29								63				50-51	
4/5												52-53	△
4/12												54-55	
4/19												56-57	
4/26												58-59	
5/3												60-61	
5/10												62-63	
5/17												64	
5/24													
5/31													
6/7													
6/14													
6/21													
6/28													
7/5													**

* Even numbers indicate purchased programs, odd numbers are produced ones.

** Evaluation final report due 7/31/75

TABLE 27-B. HEALTH EDUCATION COMPLETION MILESTONES 6/30/75

WEEK ENDING	6/8	6/15	6/22	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31	9/7	9/14
CONSUMER COMMITTEE	▲													▲	
DESIGN*					1-7		9-15		17-23		25-31				
SCRIPTS*															
Submitted by NWREL							1-7						11-13	9	15-19
Final approved script to KUAC									1-3			5-9		11-21	
PUPPETS									▲						
CASTING							▲								
SET CONSTRUCTION								▲							
CANNED MATERIALS*											2-24	24-32			
PRODUCTION AND ASSEMBLY*									1				1-3		5-7
FIELD TEST												▲			
TEACHER ORIENTATION															
SUPPLEMENTARY MATERIALS											1-32				
BROADCAST AND INTERACTION*															

WEEK ENDING	9/21	9/28	10/5	10/12	10/19	10/26	11/2	11/9	11/16	11/23	11/30	12/7	12/14	12/21	12/28
CONSUMER COMMITTEE							▲								
DESIGN*						33-35	37-63								
SCRIPTS*															
Submitted by NWREL	21-23	25-27		29-31			33-35	37-39	41-43	45-47	49	51-53	55-57	59-61	
Final approved script to KUAC		23-25				27			29-37				39	41-49	
PUPPETS															
CASTING															
SET CONSTRUCTION															
CANNED MATERIALS*											34-64				
PRODUCTION AND ASSEMBLY*	11	9	15		13-17		19	21-25	27		29	31-33			35
FIELD TEST															
TEACHER ORIENTATION		▲													
SUPPLEMENTARY MATERIALS														33-64	
BROADCAST AND INTERACTION*				1-2	3-4	5-6	7-9	10-11	12-14	15-16	17	18-19	20-22	23-24	

WEEK ENDING	1/4	1/11	1/18	1/25	2/1	2/8	2/15	2/22	3/1	3/8	3/15	3/22	3/29	4/5	4/12
CONSUMER COMMITTEE															
DESIGN*															
SCRIPTS*															
Submitted by NWREL	63														
Final approved script to KUAC			51-53		55-59		61-63								
PUPPETS															
CASTING															
SET CONSTRUCTION															
CANNED MATERIALS*															
PRODUCTION AND ASSEMBLY*		37-39		41		43	45	47	49	51	53	55	57	59	61
FIELD TEST															
TEACHER ORIENTATION															
SUPPLEMENTARY MATERIALS															
BROADCAST AND INTERACTION*	25	26-28	29-30	31-33	34-35	36-38	39-40	41-42	43-44	45	46-47	48-50	51-52	53-54	55-56

WEEK ENDING	4/19	4/26	5/3	5/10	5/17	5/24	5/31	6/7	6/14	6/21	6/28	7/5
CONSUMER COMMITTEE												
DESIGN*												
SCRIPTS*												
Submitted by NWREL												
Final approved script to KUAC												
PUPPETS												
CASTING												
SET CONSTRUCTION												
CANNED MATERIALS*												
PRODUCTION AND ASSEMBLY*		63										
FIELD TEST												
TEACHER ORIENTATION												
SUPPLEMENTARY MATERIALS												
BROADCAST AND INTERACTION*	57-58	59-60	61-62	63-64								

* Even numbers indicate purchased (canned) materials, odd numbers are originally produced programs.

TABLE 28-A. BASIC ORAL LANGUAGE DEVELOPMENT MILESTONE SCHEDULE

7/20/74

WEEK ENDING	CONSUMER COMMITTEE	DESIGN	SCRIPT	PUPPETS	CASTING	SET CONSTRUCTION	PRODUCTION AND ASSEMBLY	FIELD TEST	TEACHER ORIENTATION	SUPPLEMENTARY MATERIALS	BROADCAST	DELIVERY OF EVALUATION DESIGNS AND REPORTS
6/8	▶	1-4 ▨										
6/15		▨										
6/22		5-8 ▨										
6/29		▨										
7/6		9-12 ▨										
7/13		▨										
7/20		13-16		▷								
7/27												
8/3												
8/10												
8/17										1-16		
8/24												▷
8/31			1-6			▷						
9/7	▷				▷							▷
9/14									▷			
9/21			7-8				1	▷				
9/28							2				1	
10/5			9-10				3				2	
10/12	▷						4-5				3	
10/19			11-12				6-7				4	
10/26		17-18					8-9				5	
11/2			13-14				10				6	
11/9		19-20					11				7	
11/16			15-16				12-13				8	
11/23		21-22					14				9	
11/30											10	
12/7		23-24	17-18				15				11	▷
12/14							16				12	
12/21		25-26	19-20				17			17-32	13	
12/28												
1/4											14	
1/11		27-28	21-22				18				15	
1/18							19				16	
1/25		29-30	23-24				20-21				17	
2/1							22				18	
2/8		31-32	25-26				23				19	
2/15							24				20	
2/22			27-28				25				21	
3/1							26				22	
3/8			29-30				27					
3/15							28				23	
3/22			31-32				29				24	
3/29							30				25	
4/5							31				26	▷
4/12							32				27	
4/19											28	
4/26											29	
5/3											30	
5/10											31	
5/17											32	
5/24												
5/31												
6/7												
6/14												
6/21												
6/28												
7/5												

TABLE 28-B. BASIC ORAL LANGUAGE DEVELOPMENT COMPLETION MILESTONES 6/30/75

WEEK ENDING	CONSUMER COMMITTEE	DESIGN	SCRIPT Submitted by by NWREL	Final approved script to KUAC	PUPPETS	CASTING	SET CONSTRUCTION	PRODUCTION AND ASSEMBLY	FIELD TEST	TEACHER ORIENTATION	SUPPLEMENTARY MATERIALS	BROADCAST AND INTERACTION
6/8	▶	1-4										
6/15												
6/22		5-8										
6/29												
7/6		9-12										
7/13					▶							
7/20		13-16										
7/27												
8/3												
8/10												
8/17											1-8	
8/24											8-16	
8/31			1-6				▶					
9/7	▶			1								
9/14				2								
9/21				3	▶		▶					
9/28				4				1		▶		
10/5			7-8	5								
10/12			9-10					2-3				1
10/19			11-12	6-8				4				2
10/26		17-18						5				3
11/2	▶	19-32	13-14					6				4
11/9			15-16	9-10				7				5
11/16			17	11				8				6
11/23			18-19					9-10				7
11/30			20									8
12/7			21-22					11				9
12/14			23-24	12-19								10-11
12/21			25-26	16				12-14			17-32	12
12/28												
1/4			27-28	21-22								13
1/11			29-30	20				15-17				14
1/18			31-32	23-24				16-18				15
1/25				25-26				19-20				16
2/1				27-29								17
2/8				30								18
2/15				31-32				21-22				19
2/22								23-24				20
3/1								25-26				21
3/8								27-28				22
3/15								29-30				23
3/22								31				24
3/29								32				25
4/5												26
4/12												27
4/19												28
4/26												29
5/3												30
5/10												31
5/17												32
5/24												
5/31												
6/7												
6/14												
6/21												
6/28												
7/5												

TABLE 29-A. TEACHER IN-SERVICE TRAINING MILESTONE SCHEDULE

7/20/74

DELIVERY OF EVALUATION DESIGNS AND REPORTS	BROADCAST AND INTERACTION	SUPPLEMENTARY MATERIALS IN PLACE	PRODUCTION	SCRIPT	OBJECTIVES	FEEDBACK	WEEK ENDING
							6/8
							6/15
							6/22
							6/29
							7/6
							7/13
					1-5; 30-32		7/20
					6-10		7/27
							8/3
							8/10
							8/17
▷				1-2			8/24
							8/31
▷		1	1	3-5			9/7
	1	2	2			1	9/14
	2	3	3			2	9/21
	3	4	4		11-20	3	9/28
	4	5	5	6		4	10/5
	5	6	6	7		5	10/12
	6	7	7	8		6	10/19
	7	8	8	9		7	10/26
	8	9	9	10		8	11/2
	9	10	10			9	11/9
	10	11	11	11		10	11/16
	11					11	11/23
		12		12			11/30
▷	12	13	12		21-29	12	12/7
	13	14	13	13		13	12/14
	14		14	14		14	12/21
		15	15	15			12/28
	15	16	16			15	1/4
	16	17	17	16		16	1/11
	17	18	18	17		17	1/18
	18	19	19	18		18	1/25
	19	20	20	19&21		19	2/1
	20	21	21	20&22		20	2/8
	21	22	22			21	2/15
	22	23	23	23		22	2/22
	23			24		23	3/1
		24	24	25			3/8
	24	25	25	26		24	3/15
	25	26	26	27		25	3/22
	26	27	27	28		26	3/29
▷	27	28	28	29		27	4/5
	28	29	29			28	4/12
	29	30	30			29	4/19
	30	31		30-32		30	4/26
	31	32	31			31	5/3
	32		32			32	5/10
							5/17
							5/24
							5/31
							6/7
							6/14
							6/21
							6/28
*▷							7/5

TABLE 29-B.. TEACHER IN-SERVICE TRAINING COMPLETION MILESTONES

6/30/75

WEEK ENDING	6/8	6/15	6/22	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31	9/7	9/14	9/21	9/28	10/5	10/12	10/19
FEEDBACK																			1	2
OBJECTIVES							1-5&30-32	6-10									11-20			
SCRIPT													1-2		3-4		5	6	7	8
PRODUCTION														1-2	3-4			5	6	7
SUPPLEMENTARY MATERIALS IN PLACE																			1-32	
BROADCAST AND INTERACTION*																			1	2

WEEK ENDING	10/26	11/2	11/9	11/16	11/23	11/30	12/7	12/14	12/21	12/28	1/4	1/11	1/18	1/25	2/1	2/8	2/15	2/22	3/1
FEEDBACK	3	4	5	6	7		8	9	10		11	12	13	14	15	16	17	18	19
OBJECTIVES							21-29												
SCRIPT	9	10		11		12		13	14	15		16	17	18	19-20	21-22		23	24
PRODUCTION	8	9	10	11			12	13	14	15	16	17	18	19	20	21	22		23
SUPPLEMENTARY MATERIALS IN PLACE																			
BROADCAST AND INTERACTION*	3	4	5	6	7		8	9	10		11	12	13	14	15	16	17	18	19

WEEK ENDING	3/8	3/15	3/22	3/29	4/5	4/12	4/19	4/26	5/3	5/10	5/17	5/24	5/31	6/7	6/14	6/21	6/28	7/5
FEEDBACK		20	21	22	23	24	25	26	27	28								
OBJECTIVES																		
SCRIPT	25	26	27	28	29			30-32										
PRODUCTION	24	25	26	27	28	29												
SUPPLEMENTARY MATERIALS IN PLACE																		
BROADCAST AND INTERACTION*		20	21	22	23	24	25	26	27	28								

* Only 28 programs broadcast (due to technically delayed start date).

talent required, as well as paying the $50 per studio hour production costs.

A total of 17 programs were broadcast beginning October 10, 1974, every alternate Thursday through May 8, 1975.

Politalk

Politalk production was accomplished by GOT production staff, with the program coordinator providing all scripts, interview guests, slides and recorded interviews necessary for production. This series premiered February 6, 1975 and was broadcast on Thursdays through May 8, 1975. The Department of Community and Regional Affairs' $2,500 budget for this series paid the program's coordinator and the $50 per studio hour production costs of GOT.

Fish and Game Films

Alaska Department of Fish and Game films were broadcast on Wednesdays beginning December 11, 1974 through May 7, 1975, with the exception of the four Wednesdays scheduled for Right On! make up broadcasts. The films required no GOT production effort, other than picking up, broadcasting and returning all films from the Department of Fish and Game's Juneau office.

PROGRAM SCHEDULING AND BROADCAST

The ATS-6 ALED transmission schedules for Alaska program broadcast was determined by NASA, submitted to GOT through HEW for ALED approval.

In mid-1973, HEW provided GOT with NASA's first proposed transmission schedule, giving ALED a total of 3½ hours beginning the week of June 11, 1974 with an additional 1/2 hour added beginning September 2, 1974. This schedule was approved in August by GOT (Appendix F.1).

In September 1973, NASA prepared a second proposed transmission schedule, omitting 1/2 hour of ALED's time, allotted to the Early Childhood Education program. GOT protested this decision, requesting that the time be restored to ALED (Appendix F.2)

In February 1974, the GOT still had not received word from NASA on the request for restoring the additional 1/2 hour to ALED time (Appendix F.3). After this renewed request, in February 1974, NASA provided GOT with another proposed transmission schedule, restoring ECE time, and adding Experiments of Opportunity time as well (Appendix F.4), giving ALED a total of 4 hours and 45 minutes per week for broadcasting over ATS-6. This remained GOT's working transmission schedule through late October, 1974 (Appendix F.5)

Indications in March that ATS-6 launch would be delayed were not seen by GOT as affecting ALED scheduling (Appendix F.6).

In May 1974, NASA informed GOT verbally that NASA required a complete schedule for the broadcast year, prior to the start of experimentation and system testing, including program numbers and titles.

By June 25 GOT had compiled the program broadcast schedule as requested by NASA (including 32 ECE and 64 BOLD programs). The open/close and vacation dates of all schools in the satellite footprint were used to determine the number of broadcasts necessary for each program, and scheduling was based on the most favorable dates remaining available. No programs were scheduled for broadcast when more than two schools were closed.

This program schedule became obsolete upon its completion, when GOT was informed by NIE that funding for both the ECE and BOLD series was uncertain.

Based on informal assurances from NIE that BOLD would be funded, a second in-house schedule was prepared by GOT in mid-July 1974. The BOLD series was retained, but the ECE was cut to 16 programs, to begin in January 1975 (pending funding). This left unfilled program time, prior to January, in the time block originally planned for ECE programs.

Equipment delivery and installation delays made system testing in August, as originally planned, impossible. This resulted in delays in anticipated first broadcasts, which moved specific program scheduling back until a broadcast starting date could be determined.

Former President Nixon's resignation speech was transmitted live over the satellite on August 8, 1974, the first Alaska ATS-6 live broadcast.*

In early September the ALED network was still not fully operational. GOT made the decision to postpone program broadcast until September 16, then September 23. On this basis, a new program schedule was produced and mailed to all ALED participants on September 15. For this schedule BOLD was moved to Mondays, with a repeat on Fridays, to fill the 1/2 hour of ECE time. This left 1/2 hour still open on Thursdays for ECE, with some Experiments of Opportunity program slots to be filled.

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* The National Public Affairs Center for Television in Washington, D.C. originated the coverage, and PBS fed the signal over its land-line TV network to the PBS Network Delay Center in Denver (located in the same building as NCC/Denver). PBS Denver fed the signal to NCC, which broadcast it over ATS-6 on C-band uplink. ATS-6 (on IHS footprint configuration) fed the signal to the ALED network on S-band downlink. GOT's Juneau studio fed a microwave link to KINY-TV/Juneau, and KUAC-TV received the signal through its ATS-6 S-band terminal and broadcast it on channel 9 to Fairbanks. Other terminal sites in Alaska in operation in August could also receive the broadcast.

System testing was conducted in September. The first program broadcast was attempted on September 17 from Fairbanks, but could not be received at any terminal sites, so system testing continued.

On September 24, 1974, ALED participated in Demonstration HET (DemoHET). In coordination with NASA and HEW, as well as all ATS-6 HET users, ALED broadcast a 10-minute presentation on its portion of the HET experiment. Broadcasting from both Juneau and Fairbanks on S-band uplink to the satellite, the transmission was received on C-band downlink by NASA in Rosman, North Carolina, and relayed to the Washington, D.C. audience of interested federal officials.

In late September, GOT moved the broadcast start date back to October 7, and a new schedule was produced and distributed. With the delay, there were not enough Monday and Friday broadcasts left within the time frame of the experiment to fit in all the Health Education broadcasts (32 needed for the 64-program series). The "extras" were scheduled into the Thursday Experiments of Opportunity time slots. This schedule still included 1/2 hour for ECE after January 1975, pending program funding.

ATS-6 ALED program broadcast began on October 7, 1974.

In late October, the Thursday time block was moved to later in the day by NASA, with ALED losing 15 minutes every third Thursday. The Health Education "extra" programs being broadcast on Thursday (6 in all) were cancelled, due to teacher's comments that the program was then broadcast too late in the day.

In October, with schedule changes seeming to persist, the decision was made in bot Fairbanks (Appendix F.7) and Juneau to produce schedules only one month in advance.

In November, GOT requested from NASA (verbally) six extra 1/2 hours on Wednesdays (for the 6 Health Education "extra" programs), and a split in the Monday/Friday morning time slot, between the Health Education and BOLD series. (A break between the two series would make it easier for village teachers to handle the different aged audiences viewing each series.) In exchange for these changes, GOT was willing to lose 1/2 hour on Thursdays.

NASA refused this transmission schedule change, but did give ALED an additional 1/2 hour on Wednesdays (not just the six requested). An in-house schedule was produced by GOT including these transmission changes.

In December, GOT began broadcasting Alaska Department of Fish and Game films in the Wednesday time block originally designed for ECE. Christmas programming from KUAC's PBS material was broadcast during the school holiday when regular programs were not broadcast.

GOT requested of NASA and was granted, in January 1975, special broadcast time for the Presidential State of the Union, and the Governor's State of the State and Budget addresses, which were broadcast over the ATS-6 network.

The program schedule stabilized in February with the addition of the last new Experiments of Opportunity program (Appendix F.8), and all hope for ECE program funding gone. GOT compiled a six-week program schedule for February-March which was distributed to all ALED experiment participants. A similar schedule was compiled and distributed for April/May (Appendix F.9).

Upon GOT's verbal requests in March, NASA granted a one-hour special broadcast on March 27 for Alaska Native Magazine make-up.

While attempts were made to compile a complete program schedule for the entire course of the ALED experiment, per NASA's request, a combination of factors made this impossible. Funding for ECE remained uncertain after broadcast transmission began. Delays in equipment delivery, installation and testing moved all programming back approximately one month from broadcast dates originally planned. The flexibility in the Experiments of Opportunity segment of programming caused additional schedule changes.

Overall, the most practical and least confusing solution was found to be producing program schedules on a one-month to six-week basis for Alaska user distribution.

The final ATS-6 ALED program was broadcast May 13, 1975.

The log of programs broadcast over ATS-6 by the ALED experiment is given in Appendix F.11.

Credits

All productions, both from KUAC and GOT/Juneau, included program crediting, specifying funding sources and disclaimers (Appendix I.11).

ADDITIONAL PROGRAM DISTRIBUTION

Cable TV

Additional distribution of programming over cable television systems existing in ALED site communities was pursued by GOT beginning in the spring of 1974.

In Petersburg, the cable operator agreed to pick up programming from the ATS-6 receive terminal located in the school, by means of connecting cable, without charge to GOT (Appendix F.11). By report of the utilization aide in Petersburg, ALED programming was sporadically broadcast over a separate cable channel. No ALED program schedule was included in the regular mini-scan broadcasts of the regular cable TV schedule, despite repeated requests by the aide. This lack of public information seriously affected utilization of this additional distribution system in Petersburg.

The Valdez cable TV station was also interested in broadcasting ALED programs. This was never accomplished, however, due to the relocation of the cable facilities, which made the cable link between the ATS-6 terminal and the cable station too costly for the local station to install.

Program Duplication

Cassettes of Instructional Programs were supplied to Galena and Craig on a regular basis until these ATS-6 terminals became fully operational.

A system for program distribution beyond the ATS-6 Alaska network was developed in October 1974, after program broadcast began and requests for copies of programs began to arrive to program management.

On October 10 and 18, GOT officially requested NIE's policy decision regarding distribution of programs outside the project (Appendices F.12 and F.13). In response, NIE verbally granted GOT permission to provide cassette dubs of programs upon request, and to charge users for the costs of reproduction.

Four government agencies requested copies of the 32-program Right On! health series for their own use. The Bureau of Indian Affairs requested the program for distribution in southwestern Alaska, which was not in the ATS-6 footprint and could not receive the broadcasts. The Alaska Native Medical Center in Anchorage (Indian Health Service), requested the series for use in patient education and school health, for eventual distribution at 6 service unit hospitals throughout the state. The Alaska

State-Operated School System Instructional Materials Center requested the health series for its use. The fourth agency request was from the Alaska State Library, which planned to make the series available for use through its statewide distribution system.

Dubbing of the programs was performed by KUAC/Fairbanks, at a standard cost of $800 for the entire series.

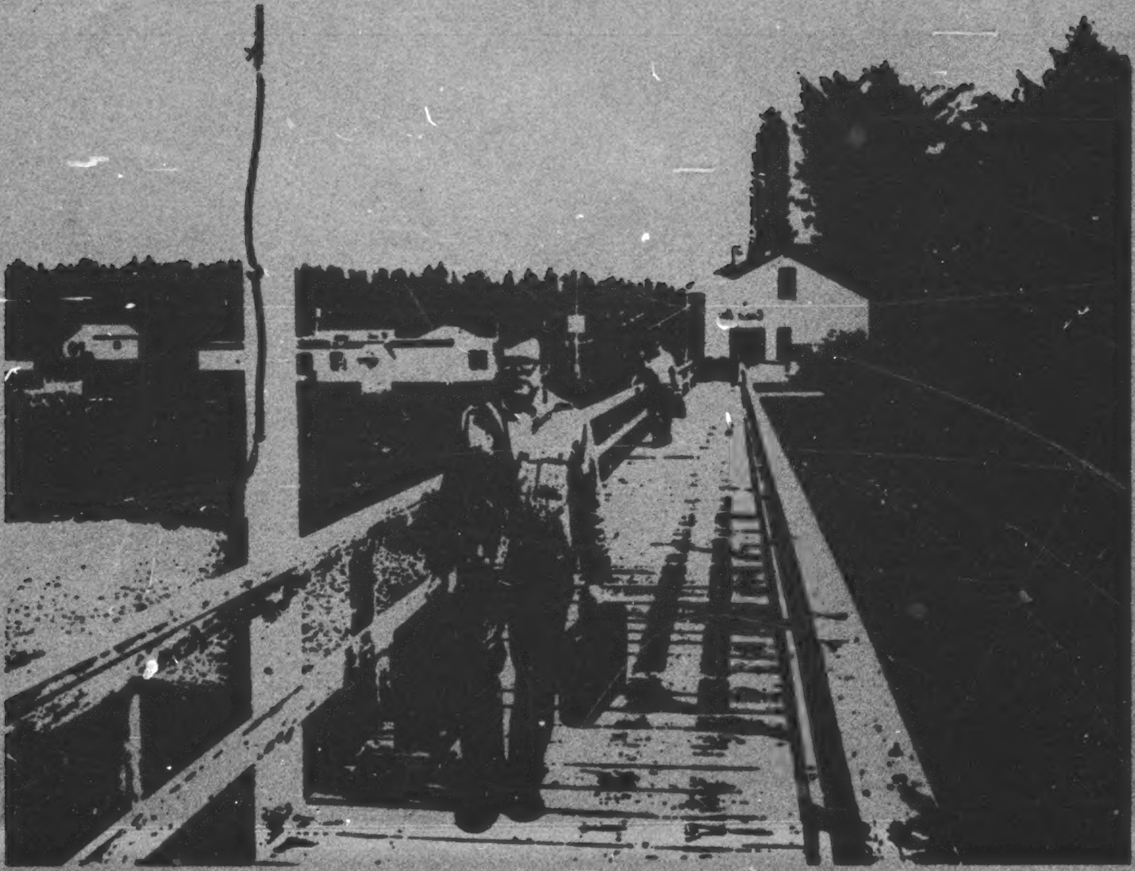
The Alaska State Library also received a second copy of the Health series from GOT, as well as the BOLD, and ANM series, to be made available statewide (Appendix F.14). It was also supplied with a variety of TIST programs by the Department of Education, and placed its copies of its own Community Library Training program for circulation.

The ANM series was provided by KUAC to the Alyeska Pipeline Service Company for distribution through its pipeline work camps. KUAC provided copies of ANM to KYUK-TV in Bethel, for delayed rebroadcast. In November and December of 1974 KUAC made contact with commercial television stations in Anchorage for possible broadcast of ANM, but plans were not finalized.

KUAC-TV, serving the Fairbanks area, broadcast each ANM program on a delayed basis the day following ATS-6 broadcasts. KUAC also requested, and was granted by GOT, permission to air both the BOLD and Health Education series over its facilities beginning September 1975, on a five-day a week basis.

Various requests for copies of individual programs were received throughout the project, and GOT generally supplied the specified programs without charge. The University of Alberta was given several BOLD programs, for use in educational media instruction courses. An elementary school in Juneau was supplied with cassettes of the health series without charge.

X. PROJECT MANAGEMENT



X. PROJECT MANAGEMENT

A chronology of significant project management events are detailed in Appendix A.

The general direction for planning and management of Alaska's ATS-6 Health/Education Telecommunications experiment was the responsibility of the Office of Telecommunications, within the Office of the Governor of Alaska.

C.L. Buck served as Director of GOT until his retirement December 4, 1974, and was involved in all phases of project development, negotiations, program submittals and correspondence with NIE. Marvin Weatherly became GOT Director in January 1975.

Within the GOT, specific responsibility for the ATS-6 ALED program experiment was assigned to Dr. Charles Northrip, Satellite Experiment Coordinator. The Coordinator had overall responsibility for continued planning and conduct of the ALED experiment in Alaska, and for liaison with federal and state agencies, and all other participants in the demonstration. He also guided the management of the education experiment, technical operations and utilization elements of the project.

Rex Taylor, the Education Experiment Manager, was responsible for the detailed planning, organization and successful conduct of the educational programming experiments. These responsibilities included the supervision and coordination of the program design contractor Northwest Regional Educational Laboratory, and the program production contractor, the University of Alaska, Division of Media Services, KUAC-TV. Additional duties involved liaison with the Alaska Department of Education, and coordination of all Instructional Programming consumer committee meetings.

The Utilization Manager was responsible for selecting and training utilization aides and for insuring that the field structure necessary for successful program implementation was maintained. The Utilization Manager also coordinated GOT's contact and liaison with site communities, Native regional corporations and Viewer-Defined Programming consumer committee members. This position was held from November 1, 1973 to March 19, 1974 by Melvin Charlie. Ronald Solomon was hired May 6 to June 7, 1974. Catalino Barril became the third and final Utilization Manager on July 8, 1974.

Ted McIntire, the Technical Manager, was responsible for planning the installation of the satellite earth terminals and related equipment, and for operation and maintenance of the system. He served as GOT's liaison with the broadcast and engineering components of the FORMS Network Control Center in Denver, and with operations personnel at ATSOCC. He was also responsible for supervision of the maintenance subcontractor. GOT's Installation and Maintenance Supervisor, George Shaginaw, was under the Technical Manager's direction, as were the temporary workers and subcontractors during the installation phase of ATS-6 HET operations.

The structure of Alaska ATS-6 ALED project management is shown in Figure 20.

Total project planning and management costs are given in Appendix J.5; Appendix J.6 details close-out activity costs. Appendix J.7 lists total project costs by funding source.

EDUCATION EXPERIMENT MANAGEMENT

Education experiment management (Figure 21) was responsible for the coordination of program development, design and production efforts. The working relationships involved in this management are indicated in Figure 22.

Initial program development was coordinated with the DOE by means of meetings between Marilou Madden, Special Assistant to the Commissioner of Education, and the GOT Education Experiment Manager. This coordination, while never detailed in

FIGURE 20. GOT ORGANIZATIONAL CHART

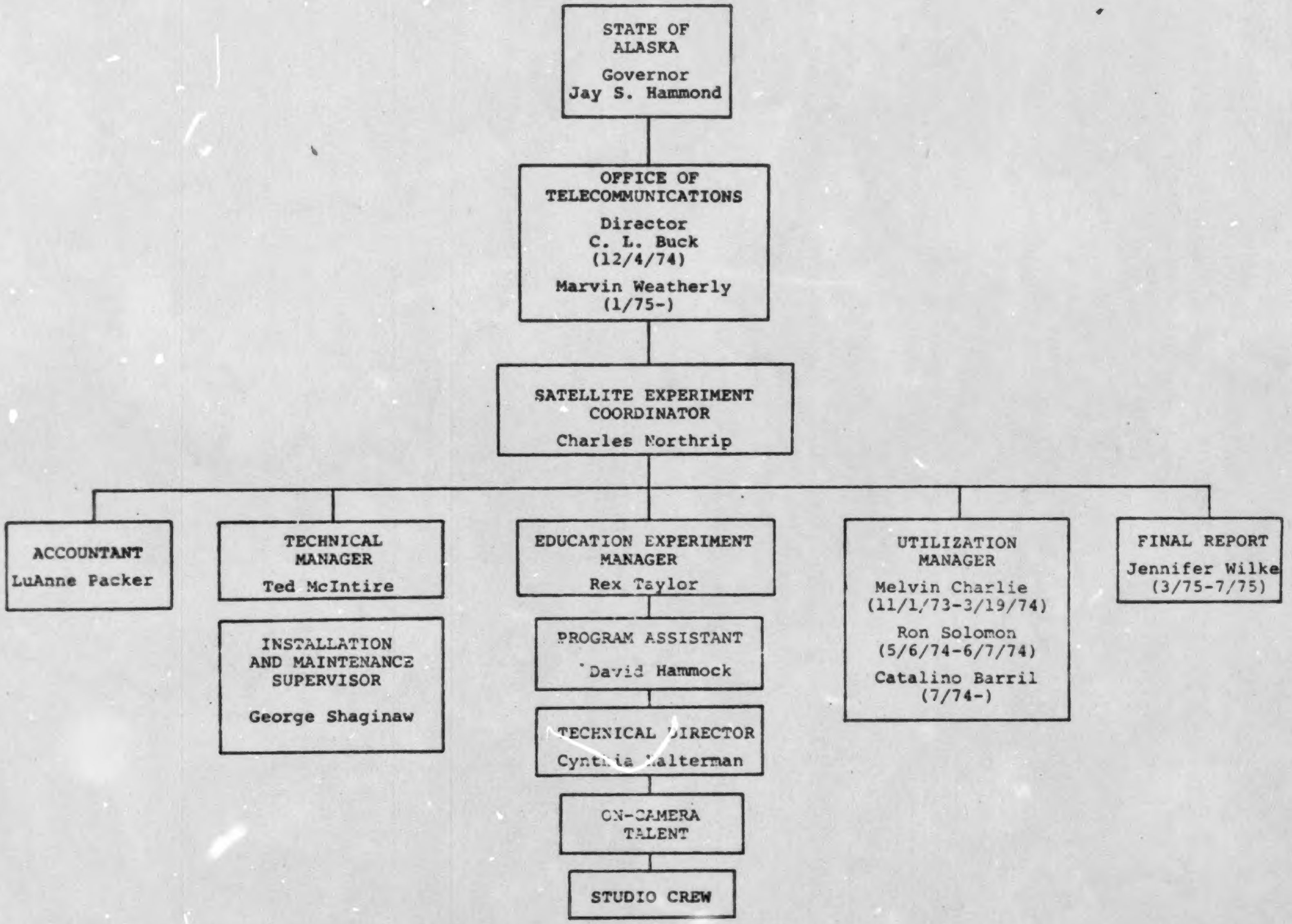

STATE OF ALASKA
Governor
Jay S. Hammond
OFFICE OF TELECOMMUNICATIONS
Director
C. L. Buck
(12/4/74)
Marvin Weatherly
(1/75-)
SATELLITE EXPERIMENT COORDINATOR
Charles Northrip
ACCOUNTANT
LuAnne Packer
TECHNICAL MANAGER
Ted McIntire
INSTALLATION AND MAINTENANCE SUPERVISOR
George Shaginaw
EDUCATION EXPERIMENT MANAGER
Rex Taylor
PROGRAM ASSISTANT
David Hammock
TECHNICAL DIRECTOR
Cynthia Halterman
ON-CAMERA TALENT
STUDIO CREW
UTILIZATION MANAGER
Melvin Charlie
(11/1/73-3/19/74)
Ron Solomon
(5/6/74-6/7/74)
Catalino Barril
(7/74-)
FINAL REPORT
Jennifer Wilke
(3/75-7/75)

FIGURE 21. EDUCATION EXPERIMENT MANAGEMENT

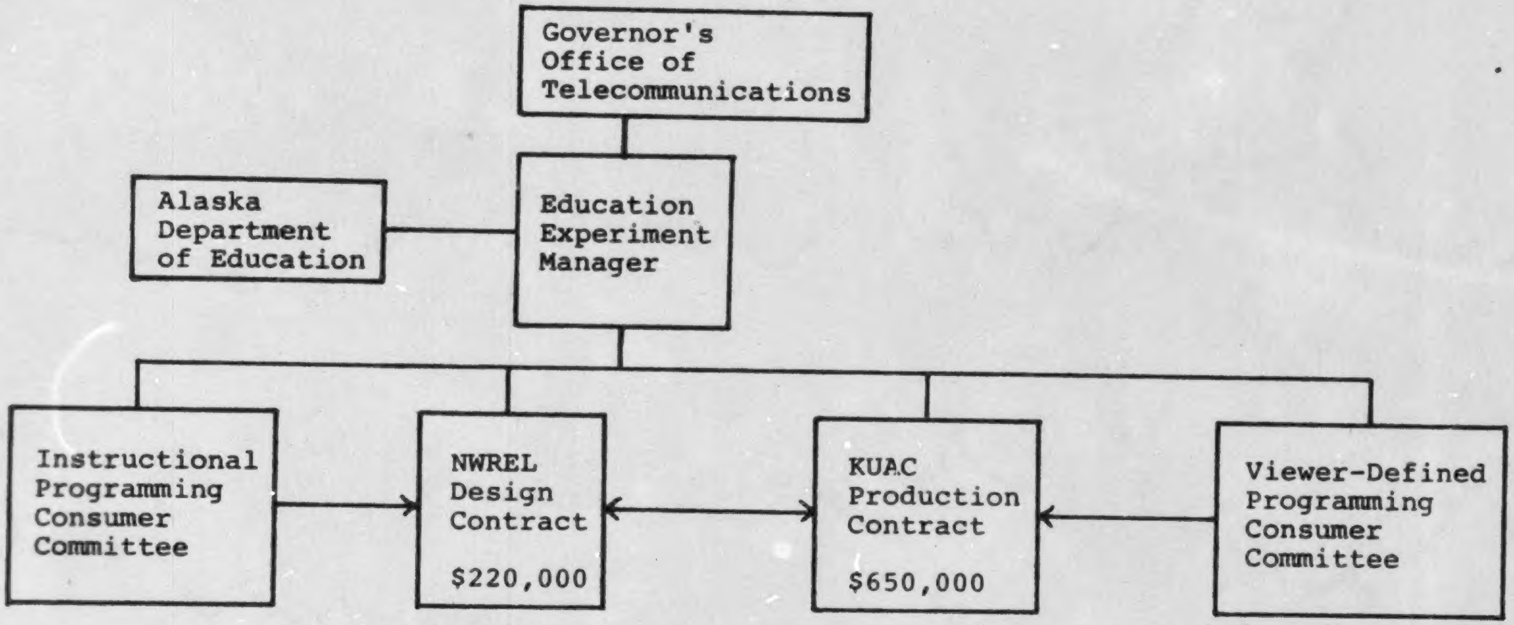
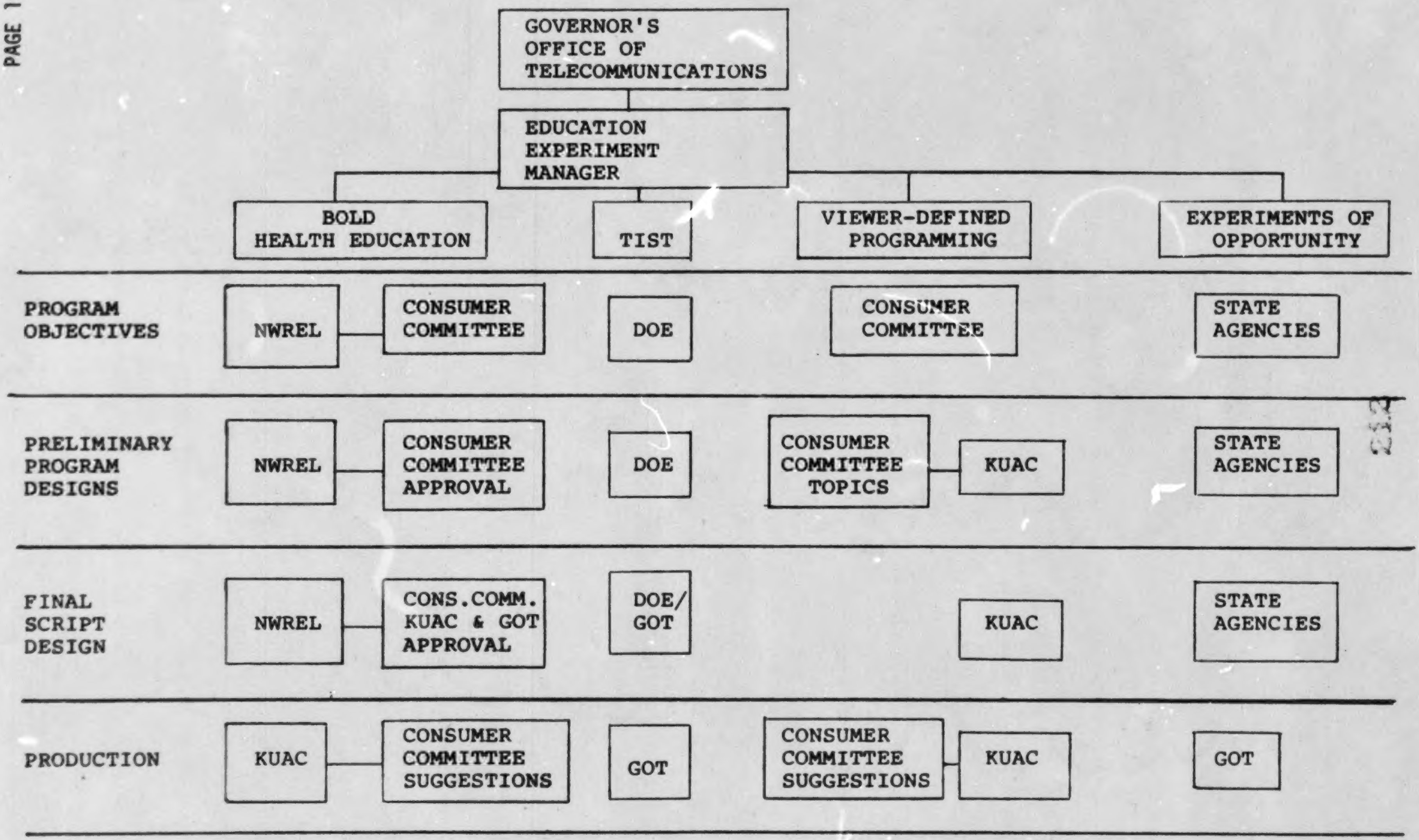

Governor's Office of Telecommunications
Alaska Department of Education
Education Experiment Manager
Instructional Programming Consumer Committee
NWREL Design Contract $220,000
KUAC Production Contract $650,000
Viewer-Defined Programming Consumer Committee

FIGURE 22. ATS-6 HET PROGRAM DESIGN AND PRODUCTION RELATIONSHIPS


GOVERNOR'S OFFICE OF TELECOMMUNICATIONS
EDUCATION EXPERIMENT MANAGER
BOLD HEALTH EDUCATION
TIST
VIEWER-DEFINED PROGRAMMING
EXPERIMENTS OF OPPORTUNITY
PROGRAM OBJECTIVES
NWREL
CONSUMER COMMITTEE
DOE
CONSUMER COMMITTEE
STATE AGENCIES
PRELIMINARY PROGRAM DESIGNS
NWREL
CONSUMER COMMITTEE APPROVAL
DOE
CONSUMER COMMITTEE TOPICS
KUAC
STATE AGENCIES
FINAL SCRIPT DESIGN
NWREL
CONS.COMM. KUAC & GOT APPROVAL
DOE/ GOT
KUAC
STATE AGENCIES
PRODUCTION
KUAC
CONSUMER COMMITTEE SUGGESTIONS
GOT
CONSUMER COMMITTEE SUGGESTIONS
KUAC
GOT

writing, resulted in frequent meetings during the initial planning phase of the project, to clarify Instructional Programming objectives.

The DOE representative continued to participate in later stages of program design, and was principally responsible for the program content of the TIST series. With TIST in production in November 1974, the DOE representative met with GOT Technical Directo Cynthia Halterman, approximately once a week for revised TIST program planning.

Programming design for BOLD, ECE (until suspended), and Health Education was accomplished by NWREL, under a contract agreement specifying all work to be performed and required reporting procedures (Appendix A.3). With the NWREL main office located in Portland, Oregon, GOT's contract specified that an Alaskan office be established. NWREL opened an office in Anchorage from January 1974 through January 1975, when design work was completed. This office was managed by an Alaskan resident through June 1974. With the resignation of the Anchorage Director, NWREL's Director of Curriculum Development for the Alaska Telecommunications Project, Dr. Norman Hamilto spent a stipulated 1/3 of his time in Anchorage to supervise NWREL's work.

Modifications to the NWREL contract were made as necessary by funding necessities. One modification (Appendix A.3.3) was not satisfactory to NWREL, due to the amount of funding cut and the amount of work left to be performed. By verbal and written negotiation, a new modification was drawn up by GOT, which NWREL approved (Appendix A.3.4).

GOT found this working relationship with NWREL consistently good, with NWREL committed to meeting project deadlines and consumer committee guidelines, and willing to negotiate difficulties that developed. The location of NWREL offices in

Anchorage and Portland necessitated some additional travel for coordination meetings, but direct telephone contact was maintained throughout the project to monitor progress and discuss any difficulties encountered. Written verification was furnished subsequent to all verbal decisions and agreements.

Programming design for BOLD, ECE (until suspended), Health Education and Viewer-Defined Programming was accomplished with input from consumer committees selected by participating site communities and Native regional corporations, at GOT request. The meetings of all committees were coordinated and paid for by GOT, which prepared all agendas and provided all travel arrangements. Minutes of the meetings were prepared by GOT or contract personnel.

GOT management staff also established direct contact with many of the individual committee members, providing meeting notices and personal contact with any member unable to attend a meeting.

GOT's production contract with the University of Alaska, Division of Media Services, KUAC-TV (Appendix A.5) specified all work to be performed in the production of BOLD, ECE (until suspended), Health Education and Viewer-Defined Programming. Coordination with NWREL for Instructional Programming design consistent with KUAC production capabilities was a continual process. Production difficulties encountered with scripts were negotiated with NWREL through GOT, with GOT's consistent encouragement for direct contact between the two agencies regarding any problems. To accomplish this coordination between design and production, GOT convened a number of meetings between the two, some to handle specific problems, others to provide more general understanding of procedures.

Viewer-Defined Programming production required a close working relationship between KUAC staff and the ANM consumer committee, which the GOT Utilization Manager coordinated. GOT convened ANM meetings, which were also attended by KUAC staff. From these meetings came specific topic selection, which KUAC developed for broadcast. The committee gave KUAC some degree of independence in developing material on each program topic, although any change in the direction of program development required committee approval.

The production of ANM, the first program of its kind to be attempted in Alaska, was a monumental task given the short lead-in time and the wide-ranging variety of program topics. KUAC's staff established numerous contacts with site residents on its trips to film village residents and events. In creating finished programs from the ANM consumer committee's topic selections, KUAC staff conscientiously attempted to produce a program centered on Native concerns, and were open to suggestions by both the committee and village residents.

Funding for ANM was partially provided by the Corporation for Public Broadcasting money granted based on GOT proposal requests (Appendices A.9 and A.9.2). A total of $71,637 granted in October 1973 and January 1975 increased the scope of production and travel possible by KUAC in producing this series.

Contract modifications between GOT and KUAC were made due to funding changes, at GOT's initiation.

KUAC's production of programs was consistently of a professional quality. Even the BOLD production problems were attributable in part to KUAC's concern for producing high quality television programming. Direction of the on-camera talents improved performances as each series continued, based on consumer committee recommendations. Overall, GOT felt KUAC to be committed to providing the best quality production possible within its means. Given the time restraints on performance, and the funding uncertainties for major components of Instructional Programming, KUAC performed its production responsibilities to GOT's satisfaction.

Production of Experiments of Opportunity programming was performed by GOT production staff in Juneau. The state agencies involved, the Alaska State Library (Community Library Training) and the Alaska Department of Community and Regional Affairs (Politalk), submitted program proposals upon GOT's request. All program content for these series was developed independently by the agencies, requiring only GOT studio and crew time. After all broadcasting was completed, GOT submitted a bill for production time, which the agencies paid.

The Alaska Department of Fish and Game's use of Experiments of Opportunity time required GOT effort only in selecting, broadcasting and returning pre-produced Alaskan film material.

UTILIZATION MANAGEMENT

Strict separation of Education Experiment and Utilization management could not be made in several areas, due to the similarity of tasks. Both were involved in consumer committee coordination and community liaison, often dealing with the same site residents. Close coordination between the two developed in order to avoid duplication of efforts. While the Education Experiment Manager was most directly involved with all elements of Instructional Programming development, he also had responsibility for monitoring ANM program development. The Utilization Manager worked closely with the ANM Native consumer committee, as well as coordinating user input and reaction to Instructional Programming. Both Managers attended as many of the consumer committee meetings as possible, and often made site visits together to acquaint residents and community leaders with the project's progress and potential for each community, as well as to seek viewer input.

All utilization working relationships centered on contact, (verbal, written and personal) with experiment users. A wide variety of initial contacts were made, with local school superintendents and boards, local councils and assemblies, Native corporations and organizations, and community residents. After GOT's requests for participation, each community selected its representative to the consumer committees.

GOT found these selected committee members to be hard working and generally enthusiastic about their participation in the project. Throughout the experiment, contact was maintained verbally and in writing with committee members. All meetings were coordinated by GOT, and participation was always above a quorum, with the exception of one ANM committee meeting. Participation at the ANM meetings was not as great due to the busy schedules of most members. At the last Instructional Programming consumer committee meetings, participants were enthusiastic about continuing programming if possible.

Contact for the selection of utilization aides followed similar procedures. Request was made by GOT for recommendations for responsible village residents interested in participating in the project on a part-time basis. From names submitted, the GOT Utilization Manager followed up with personal contact and hired the aides. GOT prepared a training manual for the aides, and held a special training session in equipmen operation and reporting procedures in August 1974 in Juneau.

The daily site logs GOT required each aide to complete were not consistently returned by all aides. Written comments were minimal, although the Utilization Manager kept in verbal contact with many and received continuing programming input from them. At GOT's invitation, four aides were invited to the last ANM consumer committee meeting, and readily expressed their likes and dislikes of the program.

The performance of the utilization aides was generally satisfactory, given the differences in personalities, and each village's existing communications facilities (more input was received where telephone communications were possible). There were problems with publicity efforts at some of the sites, despite GOT's efforts to explain the need for these activities to all aides. This was due in part to confusion over revised scheduling.

All personal contacts with both utilization aides and village consumer committee members by GOT personnel were based on a consideration of the individual's way of life and thinking. Indirect questions and conversation were often much more rewarding and informative than straightforward questions. Written responses were not consistently received from many participants; personal contact provided much more accurate and thorough information on viewer reaction.

The site visits conducted in an effort to acquaint villages with the ATS-6 project also resulted in increased participation. As GOT discovered, everyone liked to see themselves on television, and pictures and films from the sites increased enthusiasm for the project.

Utilization site visits also included encouragement for teachers and administrators to participate in the project. Where time and effort was made by GOT, participation was greater. Despite these personal efforts, some remained skeptical or unreceptive to the programming, attributable to a variety of causes probably not due specifically to this project (i.e. intrusion in classroom, lack of teacher time to participate fully, monitor located in the wrong grade classroom, dislike for curriculum other than teacher's own, etc.).

Figure 23 outlines the working relationships established by GOT utilization management.

INSTALLATION AND MAINTENANCE MANAGEMENT

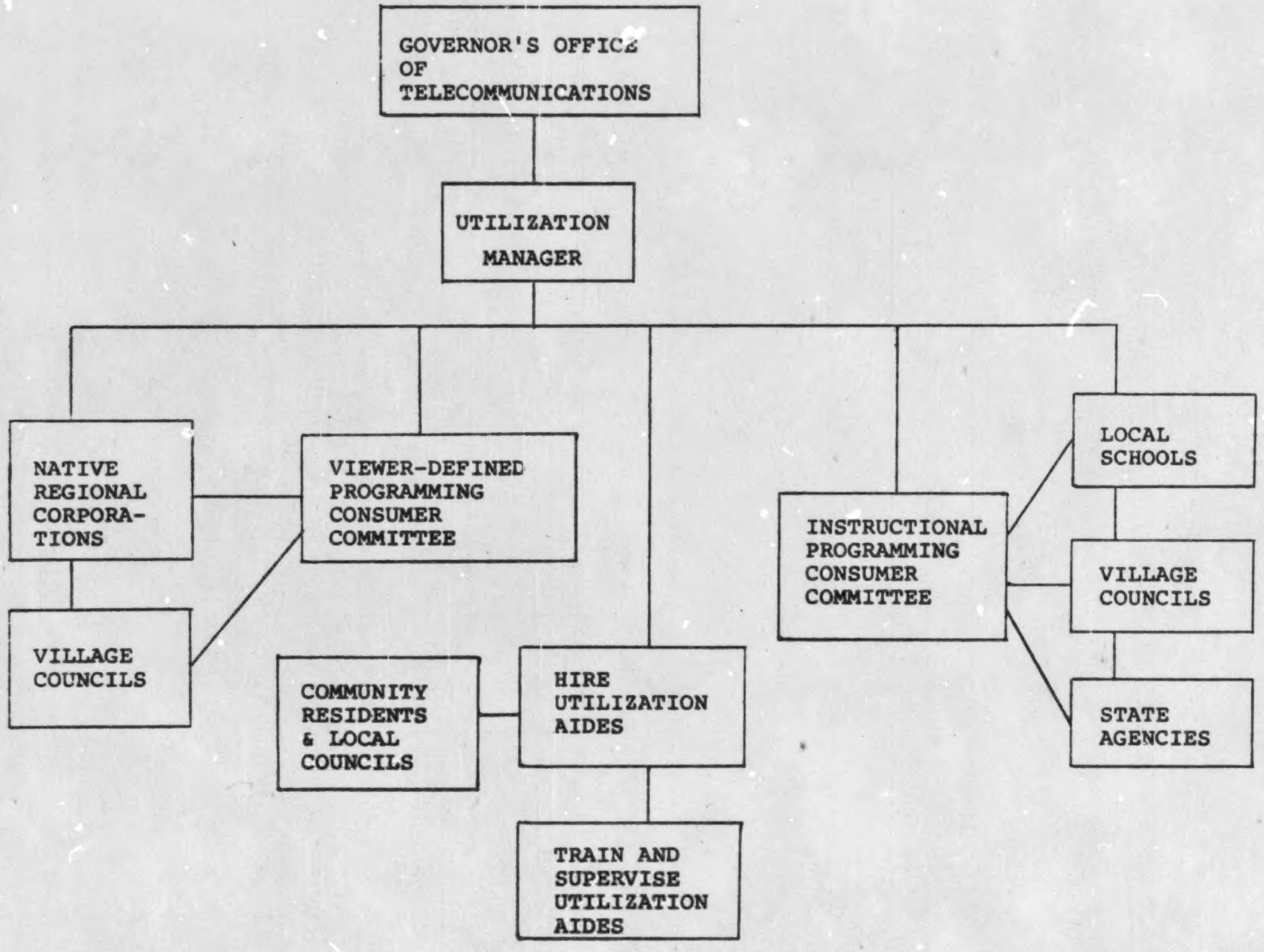
At HEW's request, the GOT Technical Manager submitted an Installation and Maintenance Proposal in June 1973. This resulted in HEW's granting to GOT of $221,500 for ATS-6 Alaska HET network installation and maintenance (Appendices A.2 and A.2.1).

Site preparation in 1974 included the GOT Installation and Maintenance Supervisor' request to all site schools for the best placement of classroom monitors. Site preparation prior to installation was delayed in several instances by weather and special ground conditions.

Actual installation was performed by GOT with assistance at some sites by the ASOSS Maintenance Department, the State Division of Building, and temporary GOT employees. The roof mounts required at several sites necessitated installation management contacts with local schools or ASOSS personnel, to assure that the building structure could support the weight, and to get permission for the necessary construction.

Installation and maintenance in Fairbanks was performed under subcontract to the University of Alaska, Division of Media Services (Appendix A.4). Assistance was

FIGURE 23. ATS-6 HET UTILIZATION MANAGEMENT


GOVERNOR'S OFFICE OF TELECOMMUNICATIONS
UTILIZATION MANAGER
NATIVE REGIONAL CORPORATIONS
VIEWER-DEFINED PROGRAMMING CONSUMER COMMITTEE
VILLAGE COUNCILS
COMMUNITY RESIDENTS & LOCAL COUNCILS
HIRE UTILIZATION AIDES
TRAIN AND SUPERVISE UTILIZATION AIDES
INSTRUCTIONAL PROGRAMMING CONSUMER COMMITTEE
LOCAL SCHOOLS
VILLAGE COUNCILS
STATE AGENCIES

provided in Valdez and Yakutat installation by Glen Mills Construction (Appendix A.7) and Wire Communications, Inc. (Appendix A.8). GOT installation efforts also included establishment of the Juneau studio facilities.

Installation management was plagued by late delivery of equipment provided by HEW. With an initial delivery in late December 1973, equipment continued to arrive sporadically until late in 1974. Digital coordinators, supplied by FORMS, were also late in delivery. With no detailed equipment delivery schedule supplied by HEW, GOT installation management had to continually cope with planning partial installations, to make as many sites operational as possible with available equipment. Maintenance, performed on an as-needed basis, was greatly hampered by the lack of spare components parts. Malfunctioning equipment had to be removed from the site for repair in Juneau or returned to the manufacturer. This left some sites non-operational during project broadcast This problem was eased somewhat in December 1974, with the arrival of the final antenna and electronics system originally destined for Galena. The school monitor at the site had been connected to the health clinic terminal by cable, to allow ALED program reception, and the extra equipment could be used for replacements.

TECHNICAL INTERFACE

System Testing

Technical testing of site terminals was performed as installation was completed, where possible. ATS-6 ALED network testing began in early September 1974. The interference encountered with the simultaneous use of the two S-band downlinks caused GOT to request permission from NASA (ATSOCC) for use of the 2670 GHz frequency exclusively. With NASA's approval, this necessitated changing the frequency reception capabilities in all S-band receivers already installed. While most changes were performed by site aides from GOT instructions, a GOT technician was required to perform several of the changes.

VHF interference on ATS-1 that became obvious in October after the start of program broadcast, again required GOT to request NASA (ATSOCC) permission to convert all Alaskan VHF unit crystals for channel 3 reception. FORMS provided the new crystals, and installation was accomplished by GOT personnel in October and November.

Scheduling

Scheduling for ALED's use of ATS-6 was determined by NASA, through HEW, for ALED's approval. By February 1974, project management received a permanent transmission schedule, giving ALED 4 hours and 45 minutes per week (Appendix F.4). (This included 1/2 hour beyond transmission time requested, which was developed as Experiments of Opportunity.)

The only other NASA-initiated changes in ALED's transmission schedule occurred in late October, with the loss of 15 minutes on every third Thursday, and a later Thursday broadcast start time.

All ALED requests to NASA for transmission changes were made verbally to ATSOCC by GOT technical personnel. At GOT request, NASA did provide 1/2 hour of additional time on Wednesdays, beginning in November 1974.

Special broadcast time was also requested and granted for several special transmissions: former President Nixon's resignation on August 8; President Ford's State of the Union Address and Alaska Governor Hammond's State of the State and Budget addresses in January 1975; and an additional hour to rebroadcast an ANM program on March 27, 1975.

Operation

In August 1973, GOT was notified (verbally) by NASA that HEW's applications to the Federal Communications Commission for all Alaska VHF transmit licenses had been approved. VHF-authorized HET sites were thus frozen at a total of 19. The licenses, effective October 1, 1974 were received by project management prior to broadcast start.

The interface required of GOT for actual ATS-6 broadcast was all performed verbally with the Federation of Rocky Mountain States (FORMS) Network Control Center (NCC) in Denver, via ATS-1.

Fifteen minutes prior to each scheduled ATS-6 broadcast time, ATS-6 became available for Alaska HET use. KUAC in Fairbanks contacted NCC, then Juneau. Once voice contact was established, Juneau and Fairbanks synchronoized times. Five to ten minutes prior to broadcast start, NCC notified Fairbanks that NASA (ATSOCC) had the ATS-6 satellite pointed for HET Alaska transmission. Fairbanks then transmitted a color bar test pattern, peaked both transmit and receive S-band antennas, and relinquished the satellite to Juneau for antenna peaking. Attempts were then made by Fairbanks or Juneau to contact the truth sites, Allakaket and Aniak, for their reception readings. This could not always be accomplished, if contact could not be made. Either Juneau or Fairbanks then had the satellite, and after final countdown, began transmission

Prior to or during broadcast, NCC relayed to Alaska ATSOCC's power readings into the satellite, which Alaska logged.

Approximately every two weeks, GOT submitted Site Status Reports to NCC, with information on contacted sites' reception of the S-band signal.

Occasionally Alaska was unable to contact NCC via ATS-1. When contact could not be made, Alaska proceeded to broadcast at its scheduled time when the HP receiver field strength meter indicated that ATS-6 was pointed for ALED use.

Alaska ATS-6 ALED network personnel occasionally found it difficult to communicate with NCC, either due to interference or static over ATS-1, or what seemed to be the inability of NCC to understand Alaskan requests. Intrusion was frequently made by NCC during the live program use of interaction over ATS-1. With the digital coordinator interactive segment of the ATS-6 network never operational, Alaska operations personnel found it both time-consuming and, on occasion, confusing to coordinate all network operation through NCC personnel, rather than directly with ATSOCC.

Figure 24 gives a block diagram of basic technical interface for ALED ATS-6 use.

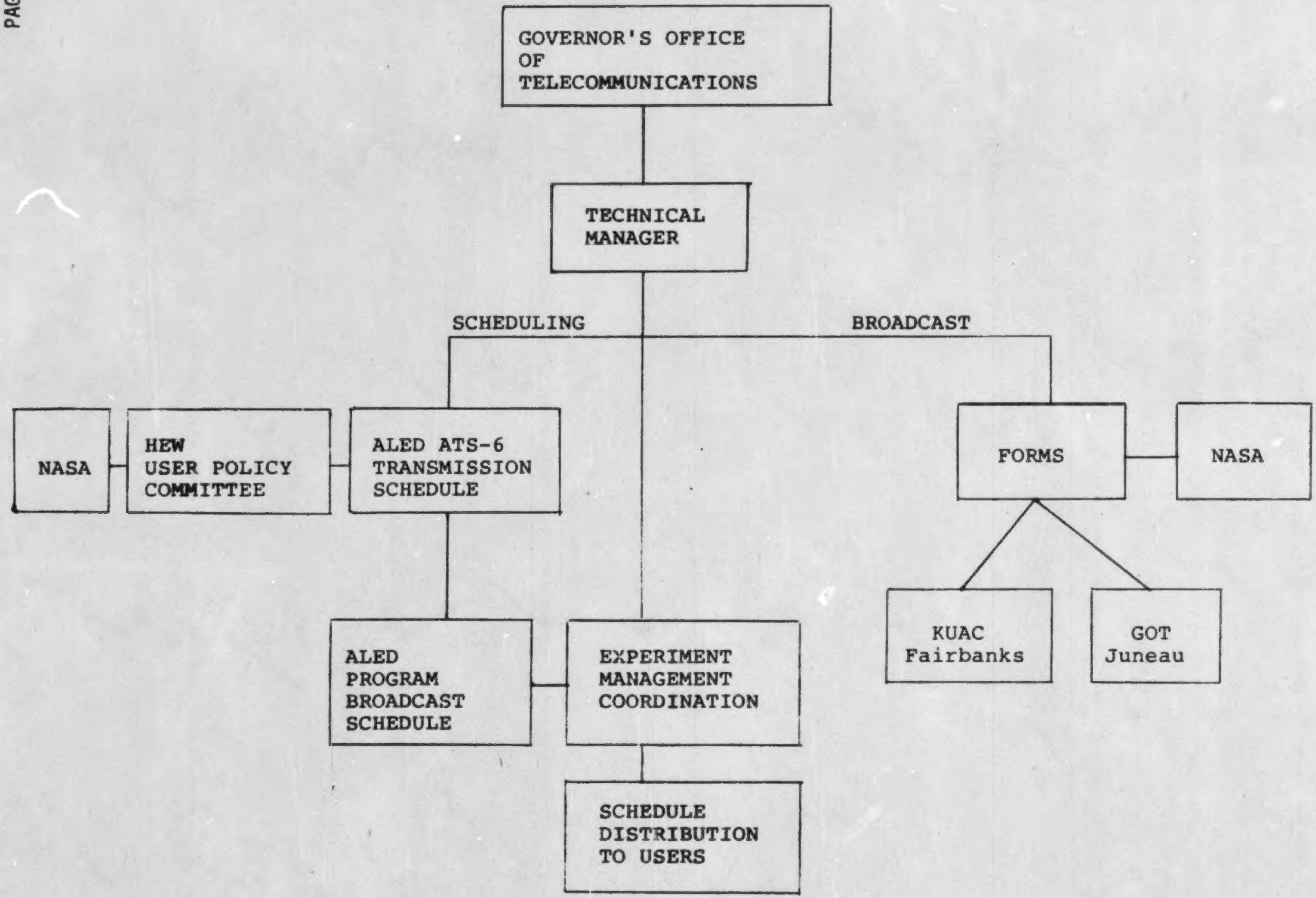
EVALUATION

In requesting a new program proposal from GOT in July 1973, NIE detailed what the new proposal should include, and stated: "In addition, do not include any requests for funds for an evaluation. NIE expects to support an independent study of the costs and effectiveness of all of the educational satellite projects..." (Appendix A.1.1.a).

Following the first site visit by NIE, a meeting between NIE and GOT included discussion on an internal Alaskan evaluation of the project. NIE suggested that the Alaska project management should include evaluation, to the extent necessary to successfully implement the program.

The March 1974 Program Plan submitted to NIE by GOT detailed evaluation costs

FIGURE 24. ATS-6 HET TECHNICAL INTERFACE


GOVERNOR'S OFFICE OF TELECOMMUNICATIONS
TECHNICAL MANAGER
SCHEDULING
BROADCAST
NASA
HEW USER POLICY COMMITTEE
ALED ATS-6 TRANSMISSION SCHEDULE
FORMS
NASA
KUAC Fairbanks
GOT Juneau
ALED PROGRAM BROADCAST SCHEDULE
EXPERIMENT MANAGEMENT COORDINATION
SCHEDULE DISTRIBUTION TO USERS

for FY 1974 ($10,000) and FY 1975 ($14,000), based on the FY 1974 funding of $650,000 and FY 1975 funding commitment of $840,000.

On May 1, 1974, GOT issued a "Request for Proposals for Evaluation of Alaska Educational ATS-F Satellite Project." GOT received State of Alaska authorization to enter into contract negotiations with a prospective evaluation contractor on May 14, 1974. A pre-bid opening conference for all parties interested in submitting proposals was held by GOT in Juneau in June.

Bids were opened on July 1, 1974, and with DOE approval, GOT selected Anthropos as the evaluation contractor. NIE approved GOT's proposed evaluation contract with Anthropos on July 22, 1974.

Negotiations regarding the level of FY 1975 funding continued through the summer of 1974. In August, NIE awarded GOT $609,198 for FY 1975. This funding cut precluded GOT's participation in an Alaskan evaluation of the project experiment. No contract could be negotiated with Anthropos, due to the funding limitations (Northrip letter to Anthropos 11/6/74).

GOT's reporting on overall project achievement was specified in the August FY 1975 NIE grant award to include a Final Report documenting GOT's participation in the ATS-6 HET experiment, to be submitted to NIE by September 30, 1975.

On May 29 - 31, 1975, GOT co-sponsored an evaluation conference in Anchorage with project evaluator Center for Northern Educational Research (CNER) subcontracted to Practical Concepts, Inc. through NIE. Utilization aides, consumer committee members and rural teachers attended this final meeting to detail their reactions to the ALED experiment, and offer their recommendations for future operational satellite systems in Alaska. Conference results were compiled by CNER, and are included in the Recommendations of this report.

MILESTONE COMPLETION

The following tables give project management completion milestones, for compariso with scheduled completion dates:

PROJECT MANAGEMENT:	Table 30-A	Milestone Schedule 7/20/74
	Table 30-B	Completion Milestones 6/30/75
EDUCATION EXPERIMENT MANAGEMENT:	Table 31-A	Milestone Schedule 7/20/74
	Table 31-B	Completion Milestones 6/30/75
UTILIZATION MANAGEMENT:	Table 32-A	Milestone Schedule 7/20/74
	Table 32-B	Completion Milestones 6/30/75
INSTALLATION & MAINTENANCE MANAGEMENT:	Table 33-A	Milestone Schedule 7/20/74
	Table 33-B	Completion Milestones 6/30/75

Delays in meeting Installation, Design and Production Milestones were caused by federal agency actions beyond the control of GOT.

Earth terminal equipment was supplied by HEW and FORMS, and arrived in Alaska on an unpredictable delivery schedule. Late delivery and lack of spare componen hampered efficent and on-time installation.

Technical problems with the ATS-6 satellite delayed broadcast start from September to October 1974.

The Design and Production Milestones for programming could not be initially met due to NIE's delayed funding commitment. The added constraints of funding limitations and negotiations made all phases of this project management frustratingly difficult.

Throughout ALED program development, negotiations with the funding agency,

TABLE 30-A. PROGRAM MANAGEMENT MILESTONE SCHEDULE 7/20/74

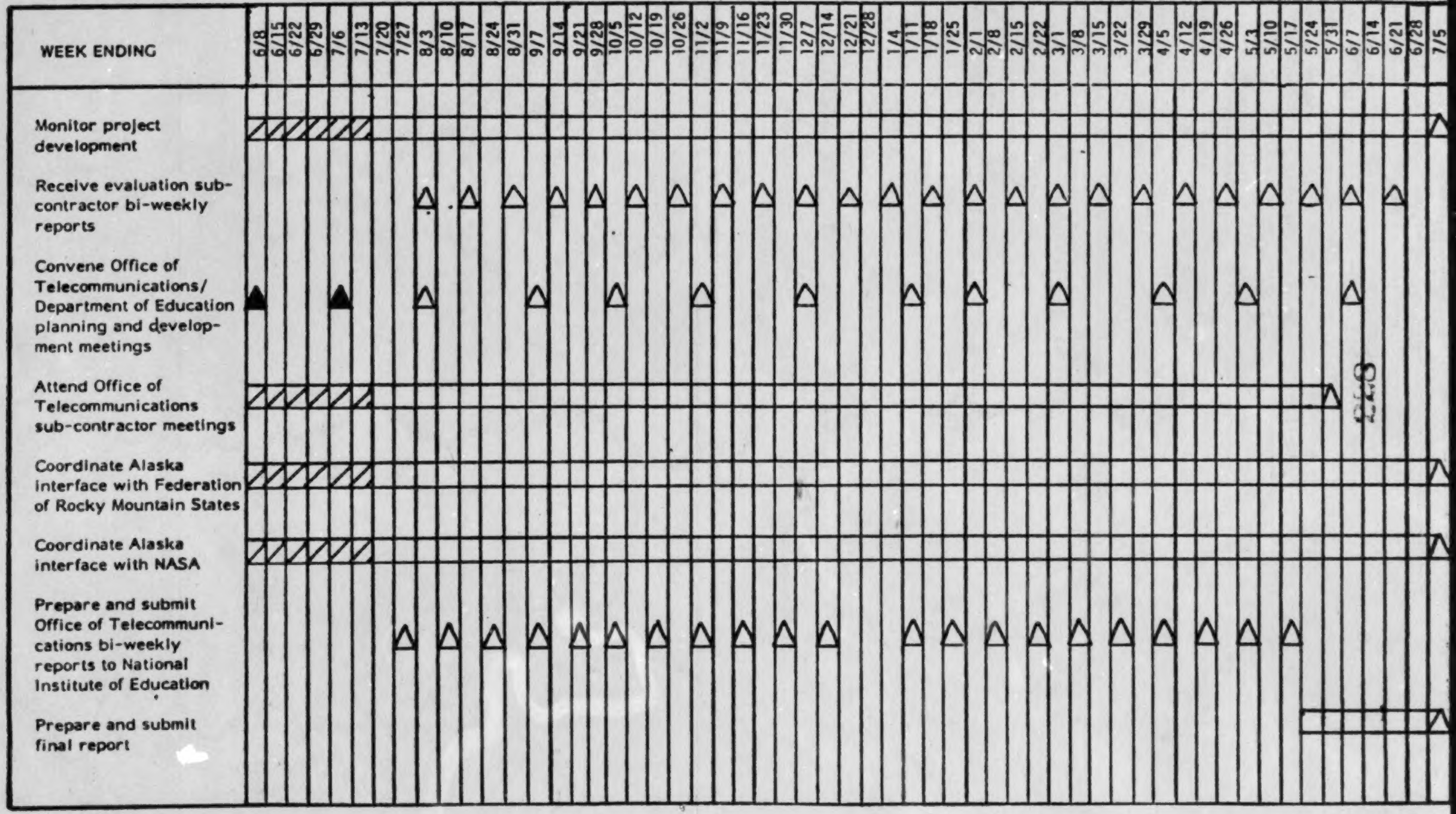


TABLE 30-B. PROGRAM MANAGEMENT COMPLETION MILESTONES 6/30/75

WEEK ENDING	Monitor project development	Receive evaluation subcontractor bi-weekly reports	Convene GOT/DOE planning and development meetings	Attend GOT subcontractor meetings	Coordinate Alaska interface with FORMS	Coordinate Alaska interface with NASA	Prepare and submit GOT bi-weekly reports to NIE	Prepare and submit final report
6/8	▨	not applicable	▲	▨	▨	▨		
6/15	▨			▨	▨	▨		
6/22	▨			▨	▨	▨		
6/29	▨			▨	▨	▨		
7/6	▨		▲	▨	▨	▨		
7/13	▨			▨	▨	▨		
7/20	▨			▨	▨	▨		
7/27	▨			▨	▨	▨		
8/3	▨		▲	▨	▨	▨		
8/10	▨			▨	▨	▨		
8/17	▨			▨	▨	▨		
8/24	▨			▨	▨	▨	▲	
8/31	▨			▨	▨	▨		
9/7	▨		▲	▨	▨	▨	▲	
9/14	▨			▨	▨	▨		
9/21	▨			▨	▨	▨	▲	
9/28	▨			▨	▨	▨		
10/5	▨		▲	▨	▨	▨	▲	
10/12	▨			▨	▨	▨		
10/19	▨			▨	▨	▨	▲	
10/26	▨			▨	▨	▨		
11/2	▨		▲	▨	▨	▨		
11/9	▨			▨	▨	▨	▲	
11/16	▨			▨	▨	▨		
11/23	▨			▨	▨	▨	▲	
11/30	▨			▨	▨	▨		
12/7	▨		▲	▨	▨	▨	▲	
12/14	▨			▨	▨	▨		
12/21	▨			▨	▨	▨	▲	
12/28	▨			▨	▨	▨		
1/4	▨			▨	▨	▨	▲	
1/11	▨		▲	▨	▨	▨		
1/18	▨			▨	▨	▨		
1/25	▨			▨	▨	▨	▲	
2/1	▨		▲	▨	▨	▨		
2/8	▨			▨	▨	▨	▲	
2/15	▨			▨	▨	▨		
2/22	▨			▨	▨	▨	▲	
3/1	▨		▲	▨	▨	▨		
3/8	▨			▨	▨	▨	▲	
3/15	▨			▨	▨	▨		
3/22	▨			▨	▨	▨	▲	
3/29	▨			▨	▨	▨		
4/5	▨		▲	▨	▨	▨	▲	
4/12	▨			▨	▨	▨		
4/19	▨			▨	▨	▨	▲	
4/26	▨			▨	▨	▨		
5/3	▨		▲	▨	▨	▨	▲	
5/10	▨			▨	▨	▨		
5/17	▨			▨	▨	▨	▲	
5/24	▨							▨
5/31	▨							▨
6/7	▨							▨
6/14	▨							▨
6/21	▨							▨
6/28	▨							▲
7/5	▨							▲

TABLE 31-A. EDUCATION EXPERIMENT MANAGEMENT MILESTONE SCHEDULE

7/20/74

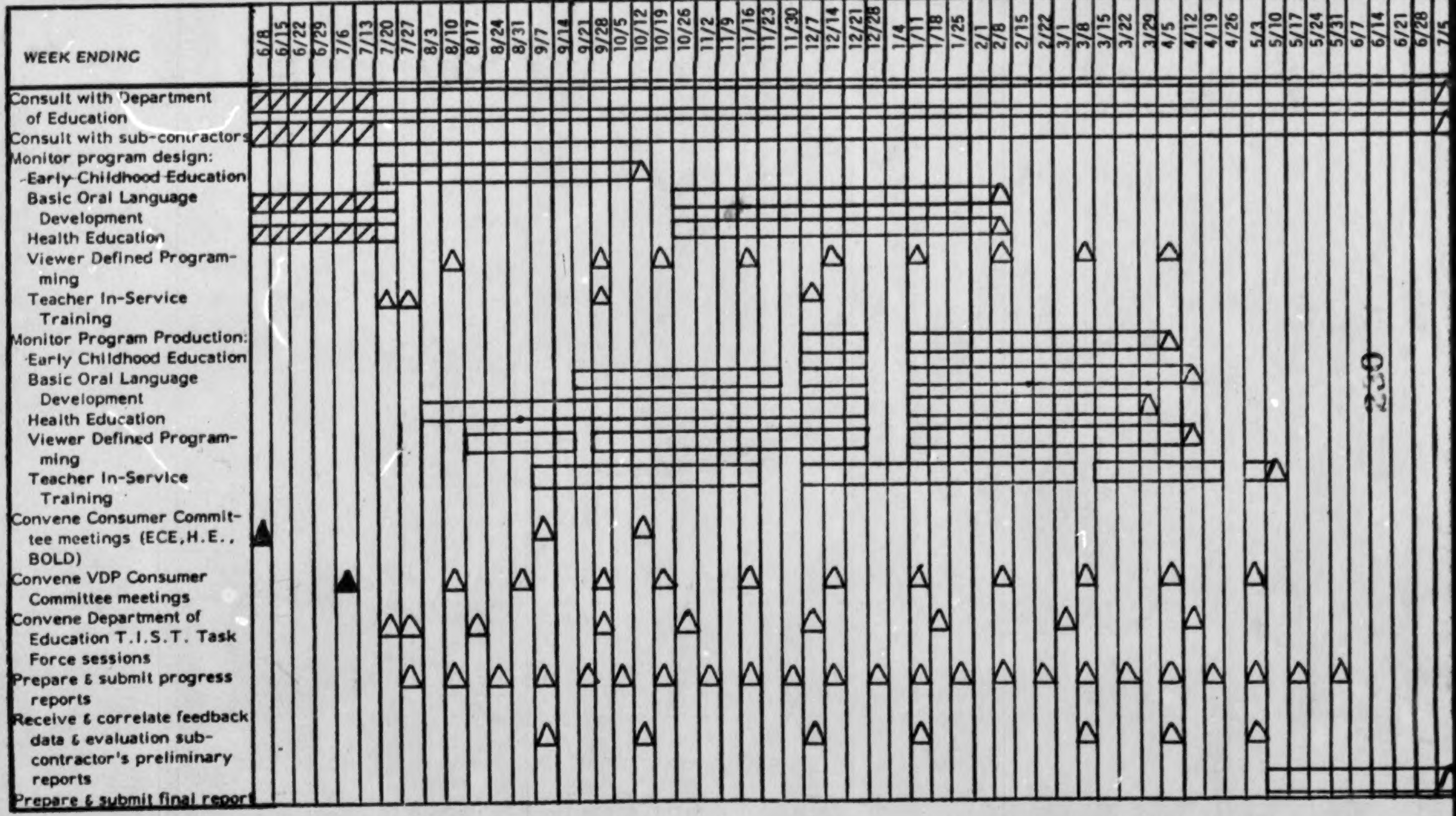


TABLE 31-B. EDUCATION EXPERIMENT MANAGEMENT COMPLETION MILESTONES 6/30/75

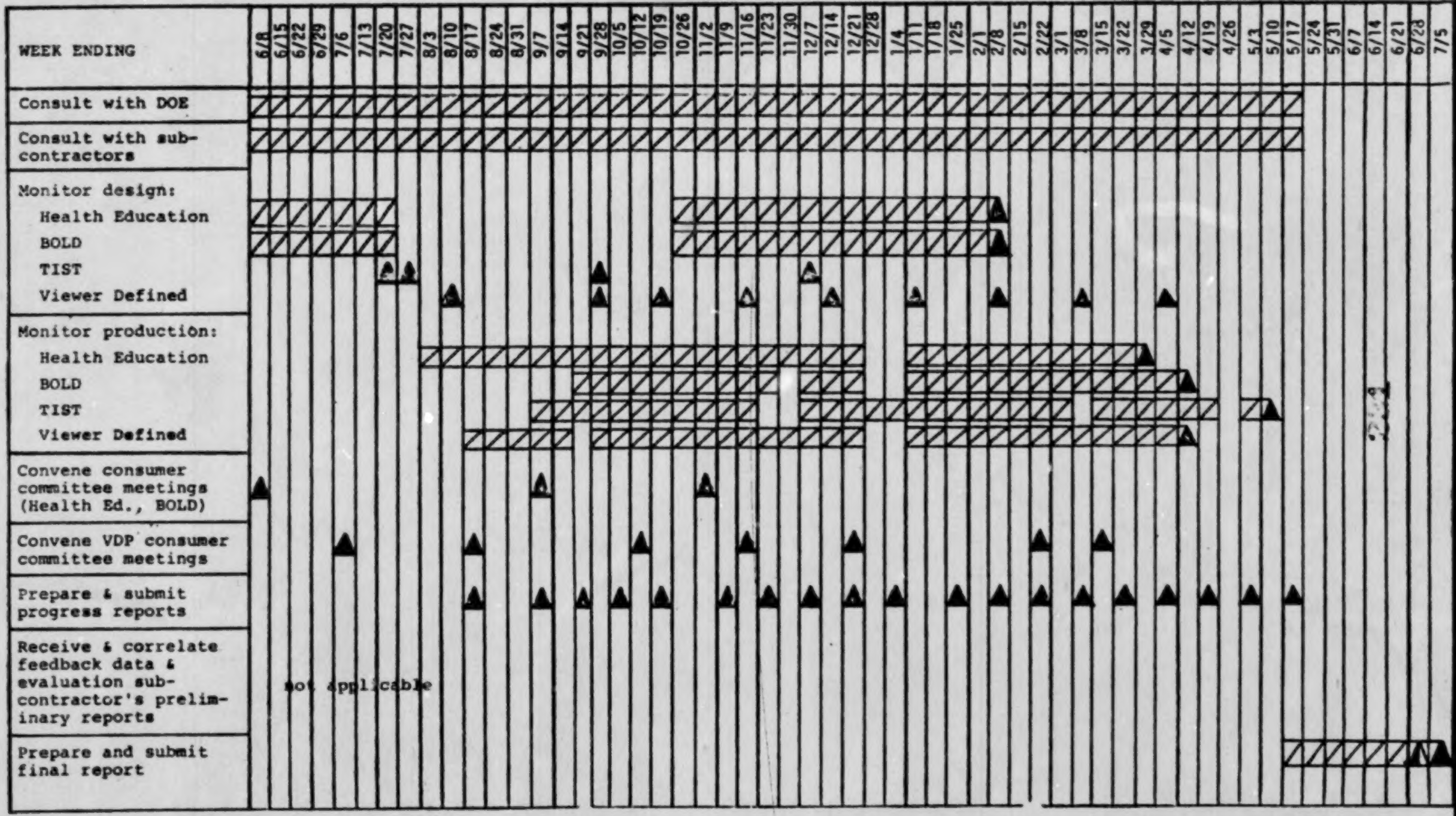


TABLE 32-A. UTILIZATION FUNCTION MILESTONE SCHEDULE

7/20/74

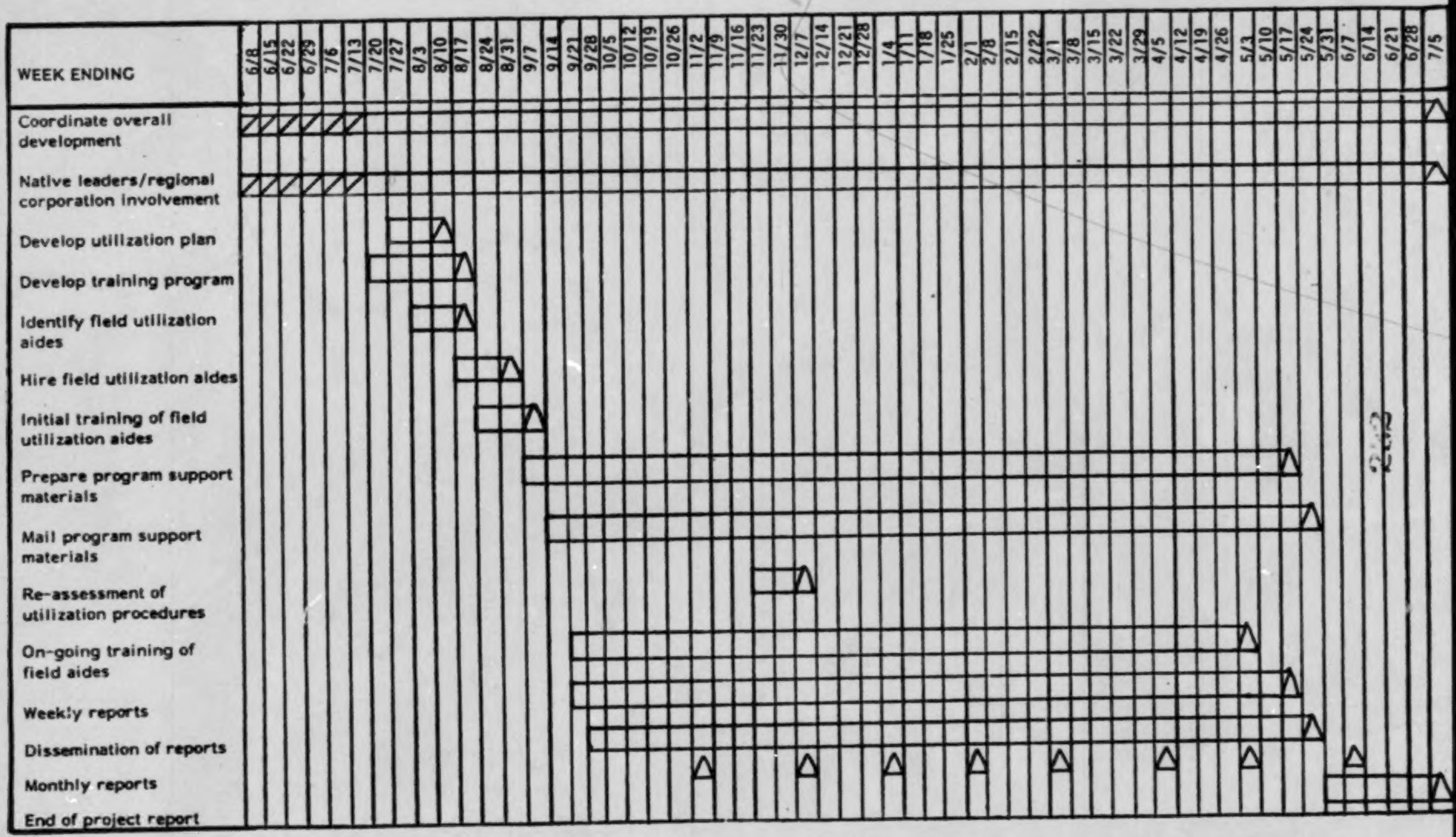


TABLE 32-B. UTILIZATION MANAGEMENT COMPLETION MILESTONES 6/30/75

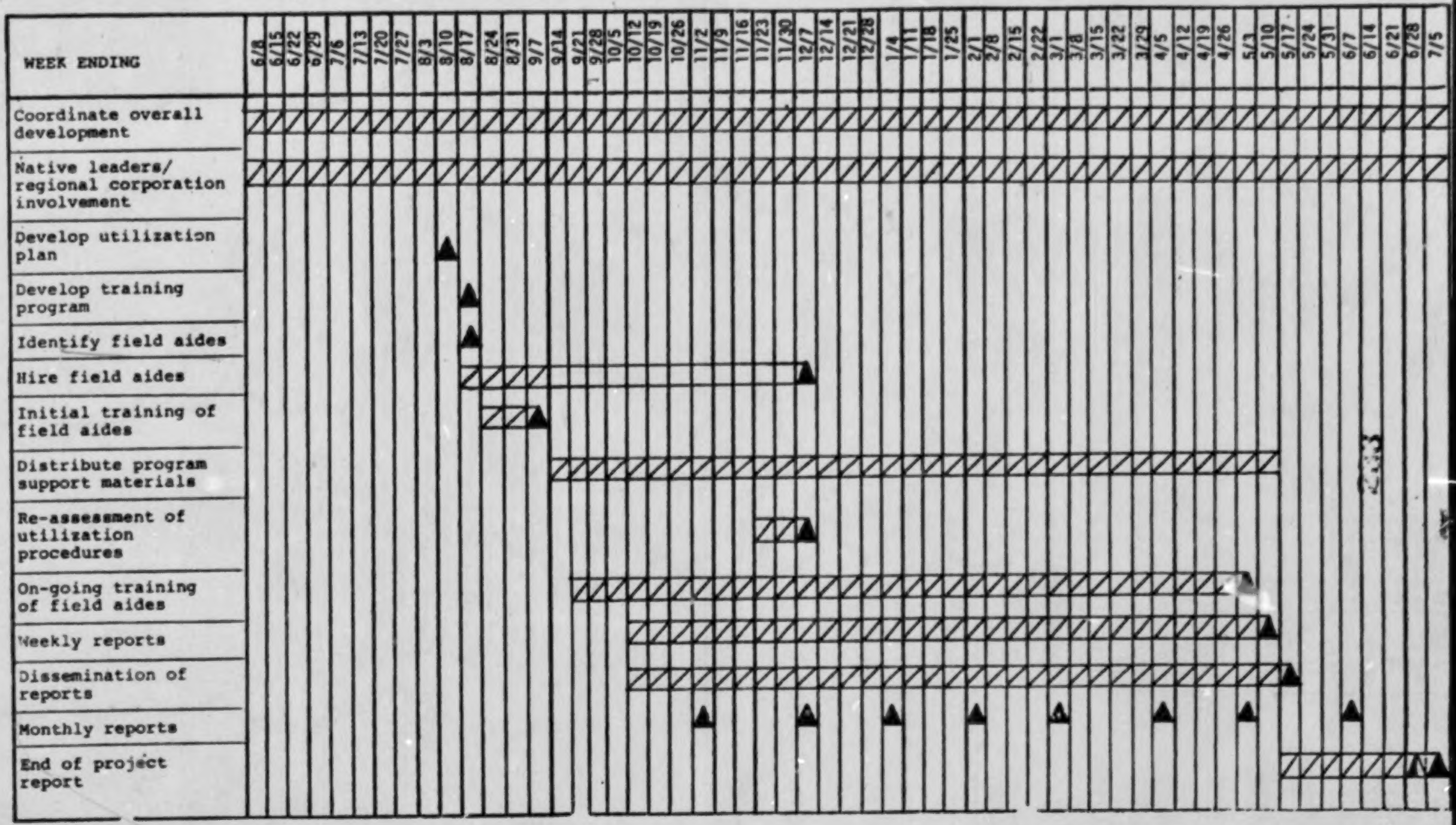


TABLE 33-A. INSTALLATION AND MAINTENANCE MILESTONE SCHEDULE

7/20/74

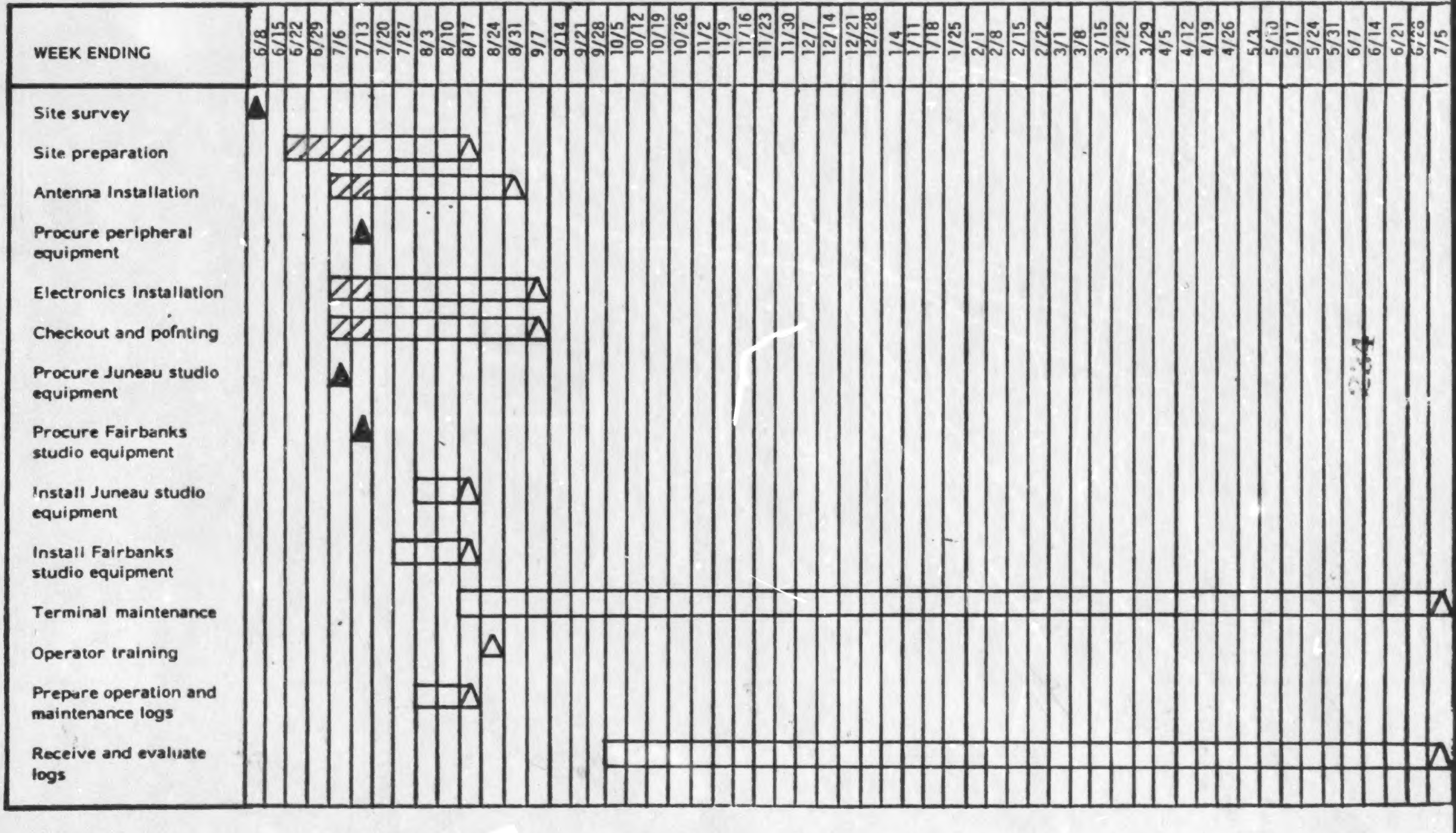
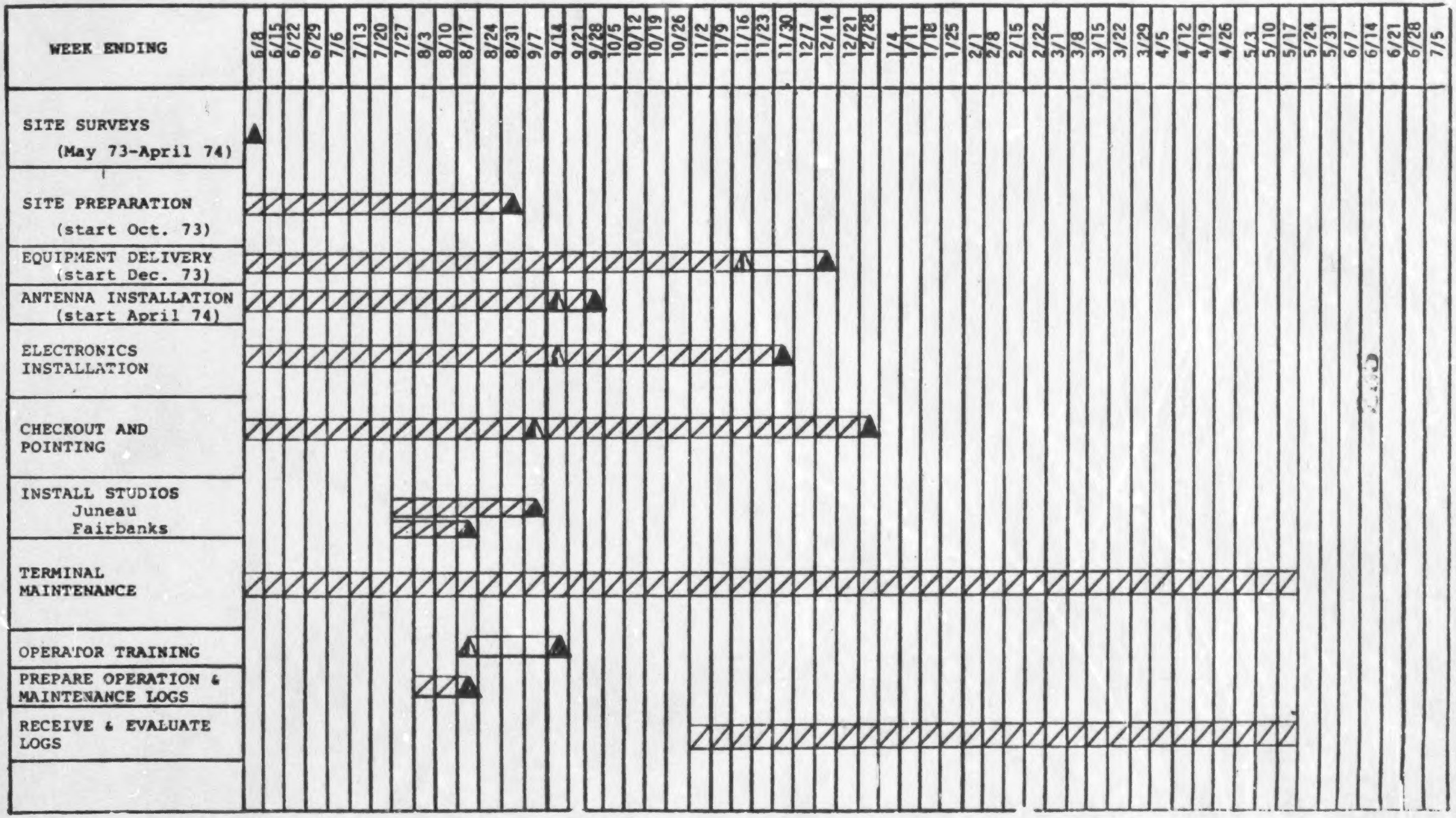


TABLE 33-B. INSTALLATION AND MAINTENANCE COMPLETION MILESTONES 6/30/75



NIE, necessitated substantial management personnel time. This requirement did not lessen, but in fact increased, in the crucial months just prior to and during program broadcast start.

With the shifting of federal supervision of the Alaska ATS-6 project from NCET to NIE in July of 1973, request was made for GOT to submit to NIE a new program proposal (Appendix A.1.1.a). (GOT had submitted its FY 1974 proposal for $774,900 to NCET on May 11, 1973 and a Budget Clarification in June.)

This new proposal for FY 1974, again requesting $774,900, was submitted to NIE in August 1973. The submission was followed by an NIE site visit in October. The resulting NIE site visit report recommended a further period of planning and redevelopment of the Alaska HET experiment.

This was unacceptable to GOT. Both the State of Alaska and GOT were committed to the development of the project and felt the program plan as it stood was adequate for the limited educational objectives of the project. GOT spent the next several months in negotiations with NIE, both verbally and with a visit to NIE offices. The compromise reached was FY 1974 funding, awarded in December 1973, for a total of $650,000, with an anticipated FY 1975 grant of $840,000 specified in the contract agreement. This FY 1974 grant award also estimated the total project cost to the government for the two year period ending June 30, 1975 to be approximately $1,490,000.

Based on this commitment from NIE, GOT proceded to award the design contract to NWREL in December 1973 (Appendix A.3), and the production contract to the University of Alaska, KUAC-TV on March 18, 1974 (Appendix A.5).

In March 1974, GOT submitted to NIE its FY 1975 request, for the previously negotiated $840,000. The second NIE review team visited Alaska April 29 - May 2, 1974, prior to granting the funding request. The critical tone of NIE's report of this site visit, with recommendations to discontinue funding support for Basic Oral Language Development and Early Childhood Education, caused GOT in mid-June to prepare a written response to the program review.

In June, GOT also learned of NIE's decision to charge PBS for the use of NCC/Denver facilities for ALED Interconnect programming. This unanticipated cost factor eliminated any further development of this programming.

In late June, NIE requested detailed milestone schedules and revised budgets, separating the costs of ECE and BOLD development from the total program budgets. GOT submitted these changes on July 15. NIE's review of the two programs was to be completed by August 30. Uncertain of the outcome of this review, GOT requested and received NIE's approval for authorizing $750 to allow completion of the ten BOLD scripts due by August 30, and for BOLD set construction not to exceed $1,000. GOT continued to prepare the BOLD series to meet production deadlines on the informal understanding from NIE that BOLD was more likely to be funded than ECE.

To aid in its review of the ECE and BOLD program series, NIE requested from GOT a list of potential reviewers for the design of the programs. GOT supplied this list by telecopier on July 10. In July, GOT submitted its own project review reports on BOLD and ECE, prepared by NWREL based on criteria outlined by NIE. Due to the funding uncertainty, NWREL suspended ECE design work in mid-July (Appendix H.17

On August 9, NIE informed GOT of its decision to reduce the proposed number of ECE programs from 32 to 16, for broadcast in January if funding was approved (Appendix A.1.5.a).

On August 23, NIE (verbally) told GOT that it would suspend all further development of ECE, but support BOLD. In response, GOT requested NIE approval to seek outside funding to continue ECE development (Appendix A.6.2).

This funding decision was altered by a September 3 phone call from NIE informing GOT that BOLD funding was again temporarily suspended. Funding uncertainties within NIE were responsible for this decision. All indications from NIE were that should NIE be funded, GOT would receive its BOLD money. In granting approval for GOT's search for other ECE funds, NIE also indicated that GOT might seek other funding sources for BOLD (Appendix A.6.4). Program broadcast was then scheduled to begin in one month.

GOT remained committed to the ECE design, although the time limitations made the outside funding search unsuccessful.

GOT was faced with the administrative decision of whether to continue both design and production work on BOLD, to enable an on-schedule broadcast start. The decision was made by GOT in September to continue full BOLD preparation, despite the lack of funding commitment.

NIE informed GOT in December 1974, two months after broadcast start, that BOLD funding was assured. These funds were granted officially by NIE on February 14, 1975, with a $55,546 contract increase (Appendix A.6.5).

Clearly, the funding uncertainties placed strain on every phase of program development in the summer and fall of 1974. These funding changes also required GOT's modification of both production and design contract agreements.

Time limitations were another major factor in all management aspects of this project. As a result, much negotiation and communication with NIE was conducted by telephone, with written confirmation usually (but not always) following verbal decisions. The time limits already imposed on the project to meet its fall 1974 broadcast deadlines were greatly tightened by the funding problems, which drastically cut design and production lead time.

GOT's reporting procedures to NIE included bi-weekly milestone completions on all project elements, beginning August 15, 1974. In addition, project Accountant LuAnne Packer prepared and submitted monthly financial reports. With the completion of broadcasting in May, GOT prepared videotape cassette dubs of all programs in the Health Education, BOLD, TIST and Viewer-Defined Programming series for submission to NIE.

In March 1975, GOT began preparation of its Final Report, for submittal to NIE upon project completion. Compiled under GOT contract agreement with Jennifer Wilke, the required outline was submitted March 31, first draft May 30, with the Final Report, documentation Appendix, and Executive Summary completed by September 30, 1975.

XI. RECOMMENDATIONS

XI. RECOMMENDATIONS

SYSTEM DESIGN

Based on the state's experience with the ATS-6 satellite system, it is recommended that the Alaska Governor's Office of Telecommunications be represented during the system specification phase of any future satellite operational system design.

The Governor's Office of Telecommunications, based on its experimental use of ATS-6, recommends that increased usefulness would be provided if future satellite systems included at least the following technical capabilities:

1. Two video channels with four high quality phase-related audio channels, each with uplink frequencies useable in Alaska.

While the ATS-6 provided part of this capability in theory, interference problems effectively eliminated the simultaneous use of the two video channels, and both channels could not be accessed simultaneously with the low-cost earth terminals. This capability in future systems would provide greater flexibility in program transmission. Phase-related, or higher quality, audio channels would permit stereo and multi-channel audio experimentation.

2. As many single channel per carrier voice channels as possible, to work between low-cost earth terminals. At least one of the audio channels should be designated solely for system control and coordination.

This capability would provide maximum communication directly between all participating sites, as well as directly between all coordinating centers throughout the state.

3. Ability to work with low-cost (10-foot) earth terminals capable of receiving

either or both of two television channels, and of transmitting and receiving voice on either/any of two or more channels.

Given the large number of potential rural Alaskan sites, it is vital that future state communications systems utilize a satellite with the capacity to communication with low-cost earth stations.

4. A footprint giving full coverage of the state.

A future satellite system with the capacity to cover the widest possible area in Alaska is the one truly effective means of developing a statewide communications network that includes the scattered and culturally diverse regions found in the state.

5. Full-time satellite availability for service, including eclipse protection.

Strictly scheduled satellite use for broadcast, such as in the ATS-6 experiment, limits experimentation and programming capabilities. Larger blocks of time for broadcast use, including weekends, should be provided by any future satellite utilized in an Alaskan communications network.

6. Future use of equipment utilized in the Alaska HET experiment should incorporate the following suggested improvements:

  a. Antennas should have closer tolerances and better materials in elevation parts to reduce wear at low elevation angles.

  b. Positive motor protection should be provided. Operators could cause motor burnout by holding control switch on when mechanism was jammed.

  c. Tracks should be placed nearer outer ends of yoke. Mounts tended to hang up on timbers if either timber or mount was slightly warped.

With tracks further out, the ends of yoke could be trimmed to allow more clearance over base timbers.

d. Fabrication tolerances should be tighter on rear base. In some cases there was insufficient room between track and screw holes to clear head of lag screws.

d. At least 6 feet of flexible lead should be provided at the indoor end of coax lead-in. Rigid cable made access to rear of receiver difficult and also put strain on connectors if receiver was moved.

f. S-band pre-amplifier chassis should be more corrosion resistant. Preamps, at coastal locations particularly, showed considerable pitting and flaking. Connectors on S-band coax lead-in also corroded to the point that the connectors could not be loosened by hand.

SYSTEM OPERATION

For future satellite communications systems, the satellite technical control center, particularly if located outside of Alaska, should have a direct means of communication with a network control center located in Alaska. In addition, the Alaskan network control center should be provided with equipment and personnel necessary to carry out technical and operational monitoring of the system.

SITE SELECTION

Future site selection should include Native regional corporation recommendations, and should directly allow all potential sites to make their own decision of whether they wish to participate or not. Since the potential impact of such a system on village life could be quite substantial, all state planning should incorporate a means for villages to consciously and clearly choose to participate.

While this input was desired for the ATS-6 experiment, the time deadlines for site selection did not make this possible. With adequate lead time, and user involvement at this preliminary planning stage, sites selected could offer the widest possible cross-section of villages interested in maximum participation once the system is installed and operational.

INSTALLATION

1. Site surveys should be conducted at all terminal locations well ahead of actual installation and final site selection, to assess the best possible antenna and receive equipment locations.

2. Equipment procurement for future systems should be performed with maximum lead time possible, to allow efficient, on-schedule installation accomplishment.

Ordering of equipment should occur well ahead of anticipated or required delivery dates. Given the transportation difficulties common in Alaska, and supplier delays, adequate lead time for equipment delivery is essential. This would allow installation to proceed systematically, eliminating the added costs of installing partial systems and the need for more than one visit to sites to complete installation.

3. Close coordination with both local school authorities and village councils is vital to insure the most practical and useful placement of viewing monitors.

In the ATS-6 ALED project, which provided both educational and public broadcasting, monitor placement proved crucial to village utilization. In villages with only one monitor located in a school classroom, adult participation was frequently limited. This was caused by some adults' hesitancy in entering the "authoritarian" schoolroom, as well as by remoteness of the school, physically or psychologically, from village life and activity.

Utilization of ATS-6 ALED educational programming was hampered in some locations by one monitor being located in one village classroom. This occasionally resulted in either the wrong age group watching the programs, or required other classes to come into the room to watch, which some teachers found disruptive. With location of one monitor in a school's multipurpose room, generally more than one classroom watched the programming, creating a larger viewing audience than was desirable.

Based on these experiences, it is recommended that a minimum of two monitors be placed in each village. One should be located in the village community hall or center, to maximize adult participation in public programming, the other in an appropriate school classroom for optimum use of educational programming.

Maximum use of educational programming could be made with the placement of a monitor in every school classroom, allowing the teachers to directly involve their own students in appropriate programming and interaction.

4. Installation planning must flexibly accommodate the variable weather conditions in Alaska, as well as the accessibility of each individual location.

Field activities would most suitably be planned for summer months, since winter weather can make both travel and outdoor work difficult, even hazardous. Transportation to many communities in rural Alaska, especially those without airstrips, can be directly dependent on weather. River freeze-up and break-up can isolate some communities for weeks in the fall and spring. Flexible planning taking these factors into account could eliminate lengthy and unnecessary delays.

5. Future communications networks in the state should plan to provide a minimum of 10% additional complete electronics components as replacement spares.

Access to replacement parts would prevent terminals from being non-operationa while malfunctioning components are repaired.

6. In future state networks, the satellite should be available for system testing as each terminal is installed, with satellite ground support fully operational as wel

UTILIZATION AND USER INVOLVEMENT

1. For future state satellite networks, the GOT strongly recommends continued utilization of the consumer committee concept, to directly involve village users in program design and planning. It is further recommended that the consumer committees remain active throughout the production phase of any future project, to provide continued input to production staff on viewer reaction and programming impact. The consumer committees should also include utilization aides, or those directly involved with future projects in each village, to provide valuable and direct feedback to producers.

2. Paid, trained and supervised utilization aides at each terminal location should be a continuing component of all future communication networks in the state.

Field aides trained in equipment operation can monitor equipment performance and provide a direct community liaison with future project management. Consistent data gathering on equipment performance and audience size can provide direct utilization monitoring. Aide training should be on-going, and provide support for continuing and enthusiastic promotion of the project and its programming within each village.

3. Two-way audio interaction should remain an option of future systems.

Exploration of this two-way communication should continue. Its usefulness and utilization could be greatly expanded by clear, high-quality audio reception, and the ~~added~~ capacity for receiving sites to communicate with each other. Interaction equipment design must be technically simplified, to encourage uncomplicated access and operation for maximum use.

Specific recommendations by ATS-6 ALED participants stress the usefulness of interaction with high school curriculum programming, as well as in public affairs programming, to enable site residents to ask direct questions of government officials, Native regional corporation leaders, etc.

4. Village participant selection should be coordinated through village councils or Native regional corporations.

In the ATS-6 ALED project, this procedure frequently resulted in the selection of relatives or close friends. In dealing with village politics, this did much to smooth the difficulties, and as a rule a person with a good amount of education was picked.

5. In coordinating with Native regional corporations, it is recommended that requests be made for counselors or trainers, people that work at the "grass roots level," to act as corporation representatives.

It was the experience of the ATS-6 ALED project, particularly with the Alaska Native Magazine consumer committee, that previous commitments and busy schedules frequently hindered maximum input from the corporation leaders.

Native input will be of the most value if future representatives are those who work with the villagers on a one-to-one basis, rather than Native leaders who work at the regional policy making level.

6. Maximum use of all fixed-time educational broadcasts could be made by rural teachers if VTR equipment was available at all sites for recording programs.

This would allow teachers to more flexibly use programs as curriculum supplements when desired, rather than requiring class participation on a strictly scheduled basis. This adaptability would increase utilization and involvement by teachers, increasing their options for using programming when convenient and practical.

7. As a further means of providing maximum opportunity for utilization of both educational and public programming on any future satellite network, scheduling should allow repeat of program broadcasts if more than a one-hour difference in time zones exists among receiving sites.

The ATS-6 ALED experiment covered three time zones. Scheduling and use of the programs were complicated by the difficulty of arranging one mutually convenient time block for some program broadcasts (i.e. a 10:00 a.m. educational broadcast in Angoon reached Allakaket at 8:00 a.m., before the children were in school).

8. With well-trained and informed utilization aides and teachers in each receiving site, the utilization of a future satellite network could provide a cost-effective means for providing a wide variety of state agency training programs directly to Alaskan rural residents.

Efficient use of future satellite networks by all agencies of state government could provide statewide training programs, decreasing the necessity and cost of state personnel travel to sites, as well as the cost of bringing rural residents to training sessions in rural areas.

PROGRAMMING

1. To acquire needed expertise in instructional media presentation, it is recommended that educational program design for future broadcast systems be performed by an experienced educational planning agency, under contract to project management.

Ideally, design should be performed by an Alaskan contractor. While this may not always be feasible, as in the ATS-6 ALED experiment, commitment should be made by the design contractor to employing experienced Alaskan educators for specific program design.

2. Design of educational programming for future broadcast networks should also involve close and consistent coordination with the rural educators who will be receiving the programs.

This involvement and input of teachers on consumer committees, for example, could help insure that programming will meet educational needs as the teachers see them, with the result of maximum curriculum utilization.

3. Prior to program broadcast start, a clearly outlined plan of field testing viewer reactions to all programs should be implemented.

With adequate pre-broadcast lead time, programs could be tested in the field, providing valuable user input for subsequent program production.

4. Programming that offers simultaneous Native translations during broadcast should be utilized in future systems, providing translations of all program material, not only segments.

For maximum use of translation broadcasts, earth terminals should have an easily accessed switchboard with earphones, or should provide more than one monitor located in different rooms, to allow users the choice of English or a translation.

5. Future program planning for an operational Alaskan satellite network should be approached imaginatively, and not be limited to the standard concepts of television program presentation.

Programming should not be looked at exclusively as the traditional half-hour or hour presentation. The potential for students, teachers and townspeople to interact with various resource people, such as Native corporation personnel, politicians, state officials, etc., should be a vital part of future program planning. The development of a comprehensive library of written and audio-visual materials that can be accessed via the satellite, plus the whole field of computer-assisted instruction will have implications for the type of instruction received by the people of Alaska.

The broad concept of a "University without walls" could become an attainable reality. Residents of isolated communities would be able to receive a high school education without leaving their village or town, or even a post-secondary education including a four-year degree and masters degree.

The potentials for and implications of the satellite making extensive educational resources of an infinite variety available to Alaskan residents in their local communities and even in their homes should be a planning element in all future satellite programming development.

6. Recommendations for future satellite network programming, as expressed by ATS-6 ALED participants throughout the project, include the following:

Social studies, emphasizing specific regions of Native Alaska to increase cultural awareness.

Alaska history from the Native viewpoint.

Adult basic education.

Vocational education and career development.

Bilingual broadcasts to provide cultural enrichment, and for training in Native language.

High school curriculum to supplement rural teacher's knowledge and effectively expand rural staff capabilities (i.e. science relevant to Alaska).

News coverage, ranging from local gossip and events to regional, state and world news.

Sports unique to Alaska (Eskimo Olympics, dog sled races, etc.).

Entertainment (i.e. dramatic program series devoted to experiences of Alaskan travelling to different regions and villages throughout the state).

PROJECT MANAGEMENT

1. The Governor's Office of Telecommunications strongly recommends that future satellite program funding be finalized for all program a minimum of six months prior to broadcast start, and that all commitments with funding agencies be made in writing at all times.

The uncertain funding status of two ATS-6 ALED programs in the crucial months just prior to and during broadcast start resulted in significant management problems regarding both program design and production, and firm program scheduling for terminal site distribution and publicity. These problems could be eliminated or lessened in future projects with firm commitment by both funding agencies and project management to finalize all funding well in advance of broadcast start.

It is further recommended that future project management include one staff position specifically to handle all reports to funding agencies.

This management design would provide for prompt and consistent reporting. Further, it would free all other project personnel from time-consuming reporting efforts, and allow maximum concentration on project responsibilities and coordination.

2. Management of future program development should include frequenc coordination meetings between program designers, scriptwriters and producers, particularly during development and initial production phases.

This coordination and establishment of clear working relationships between design and production is essential for maximum communication during program development.

3. To facilitate program development, it is recommended that producers be funded for coordination input with designers at the start of program design. For adequate preparation prior to production, it is further recommended that the production contract be finalized a minimum of nine months (preferably 12 months) prior to scheduled broadcast start.

4. Production of programs for future systems should include technical training for Alaska Natives.

In the ATS-6 ALED experiment, few Alaskan Natives experienced with television or film production could be found. It is important that future efforts offer training programs, adequately funded and supported, to give Alaska Natives experience in production of television programming.

5. Coordination of the utilization of educational programming should be established between future project management and a central state education agency (such as the Alaska Department of Education, or ASOSS).

Rural teachers, familiar with the state's various educational agencies, could be provided with systematic and continual encouragement to utilize programming in their own curriculum. Such coordination could more effectively involve teachers in accepting and using the programming resource in their classrooms.

6. An active and consistent public information effort is essential to encourage user participation in any future satellite communications network. A consistent information flow is a vital element in communications between all management

personnel and site users.

A clear description of public information responsibilities should be provided to all utilization aides, with support materials (posters, schedules, newsletters) provided by project management.

During the first month a future broadcasting system is in full operation, personal visitation and follow-up orientation should be performed by project management. In the ATS-6 ALED experiment, site visits by management staff noticeably increased site enthusiasm for the project, as did photographs of villages and residents used in the programs.

7. Management for future satellite programming systems throughout Alaska should include a communications advisory board consisting of Native leaders, educators from ADOE, ASOSS and BIA.

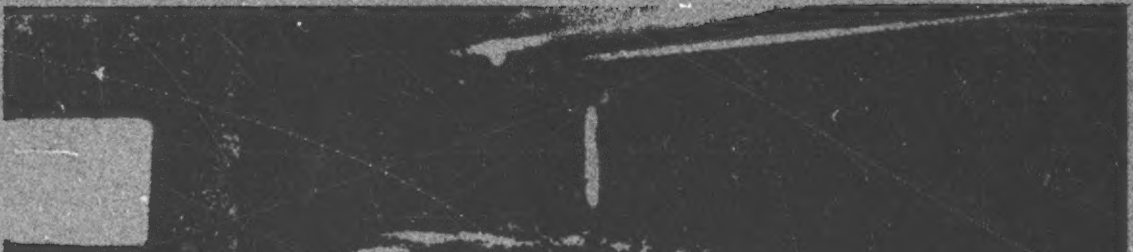
A further recommendation made by ATS06 ALED participants was that Native regional corporations be involved financially in program management, but that village Native corporations, more directly concerned with people and village life, provide the actual input for programming relevant to rural Alaska.

8. Evaluation efforts for subsequent projects should approach with care the selection of personnel involved in village visits and evaluation of village reactions.

Numerous visits by "outside," unknown researchers create village reluctance to speak plainly. Alaskan evaluators are much more acceptable to village residents and can more readily gain access to straightforward opinions. The

Native people throughout the years have been subjected to constant questioning from a myriad of governmental and private agencies. Consequently, they have developed the art of telling visiters what they want to hear. Native participation and support for any future project should also include direct Native involvement in evaluation of project impact.

XII. SUMMARY



XII. SUMMARY

The ATS-6 ALED project was a unique experiment--a first opportunity for the State of Alaska to gain the experience of operating a satellite programming network. The experiment provided a first-hand demonstration of the practicality of media technology in meeting the communications needs imposed by Alaska's rugged terrain, harsh climate and sparse population.

The experiment was a model for gauging the appropriateness of using satellite communications for instructional purposes, and for developing programming content specifically designed to be relevant to the needs of rural Alaskan residents, both student and adult. It further demonstrated the potential importance of satellite television programming in supplementing and supporting the instructional resources of Alaska's rural classroom teachers.

As a result of this experiment, GOT gained experience in a wide variety of areas directly relevant to the planning of a future statewide operational satellite network.

Earth terminal equipment was installed by GOT in 19 widely scattered communities throughout the state, Over 1,000 miles separates the northernmost experiment site, Allakaket, with Craig, the southernmost community in the ALED footprint. The problems encountered in installation due to the isolation of site communities, limited transportation and variable weather conditions provided valuable input for future communication systems installation planning. None of the 25 S-band antennas in use failed during the project, despite weather conditions, and none were damaged. Temperatures to -60 degrees F. did not impair receive terminal operation, and only one equipment failure was directly attributable to colder weather. Antenna installation in several communities required special preparation due to ground conditions and winter snow accumulation.

Fourteen terminal sites were rural Alaskan villages with an average population of less than 250. Alaska's ATS-6 ALED footprint included villages with substantial populations speaking, in addition to English, Central Yupik Eskimo, Thlinget and five Athabaskan dialects. The experiment presented GOT with the challenge of coordinating input from the culturally diverse footprint population in designing and producing culturally relevant programming. All community participants were selected by their own communities or one of the four Native regional corporations represented within the footprint. Utilization of ALED programming was further coordinated with local schools and village councils, as well as through the 15 aides hired and trained in the operation of all site terminal equipment.

This experiment also involved GOT in coordinated working relationships with other state agencies, in developing programs for distribution over ATS-6. Instructional programming subject areas were based on the Alaska Department of Education's priority of needs for Alaska rural children and the Department of Education provided continuing input throughout the project. Experiments of Opportunity program development directly involved the Alaska Department of Community and Regional Affairs, the Alaska State Library, and the Alaska Department of Fish and Game.

Instructional Programming design was accomplished for GOT by a contracted professional educational design agency, with continuing guidance from two 10-member committees of Alaskan program consumers. All programs were produced for GOT by an Alaskan professional television production facility.

In less than one full year of planning, 100 hours of original television programming were designed, and production and broadcast began. Instructional programs were available to 1200 rural school children (K-5th grade), and 150 rural Alaskan educators. Viewer-Defined Programming was accessible to 9,000 Alaskan village residents, young and old, as well as to the 50,000 urban residents of Fairbanks.

The ALED project gave GOT a first-time experience in the operation of an interactive satellite communication system, providing an innovative and direct means of viewer feedback. Another unique feature of the project was the experimentation with simultaneous broadcasts in English and two Alaskan Native languages.

The technical interface required with NASA and NCC provided GOT with useful experience in the day-to-day coordination and scheduling of real-time satellite broadcasting. The operation of the system resulted in specific technical recommendations for future system equipment design and capabilities.

The ATS-6 ALED experiment was a model learning experience for the state. Both the successes and the mistakes of this experiment were valuable to the continued sophistication of Alaska's development of the most practical, useful and effective future operational satellite system for the state.

A full external evaluation of this project is being prepared for NIE by Practical Concepts, Inc., with assistance from the Center for Northern Educational Research. In GOT's view, one of the most important aspects of this experiment has been the consumer input and reaction during all phases of development. In spite of difficulties encountered and the short time span of this project, site participants have expressed the hope that the project could continue, and expand:

> In behalf of the school board we would like another ATS-6 project

to continue next year. The school children really enjoy the program and they also like to communicate on the satellite.

--School Board Chairman, Nikolai

I'm going out to get some signatures on a petition that we keep ATS-6 in McGrath next year...

--Utilization Aide, McGrath

The satellite TV reaches many in a way that radio and regular TV could not and we of Valdez are glad that we are part of the whole program.

--Utilization Aide, Valdez

We sure would like to have another ATS-6 project next year. The school children have more interest in school now. They look forward to watching TV. They really enjoy it and it's very educational.

--Village council President, Nikolai

It has been very rewarding to see the very positive and beneficial results (of the Health Education series)...If extended and expanded, (the ATS-6 project could) change the educational face of Alaska and broaden the educational concepts of the entire nation. I feel confident this concern is shared by the teachers and students of rural Alaska as well.

--Chairman, Health Education consumer committee

The potentials for satellite communications in Alaska are beginning to be discovere by planners and users alike.